IASIS PARTNERS, LLC

April 27, 2010

Rockingham County Board of Supervisors
20 East Gay Street
Harrisonburg, VA 22802

By electronic transmission and not by mail:

Pablo Cuevas, Chairman, District 1 Supervisor
pcuevas@rockinghamcountyva.gov

Frederick E. Eberly, District 2 Supervisor
feberly@rockinghamcountyva.gov

Dee E. Floyd, District 3 Supervisor
omle48@aol.com

William B. Kyger, Jr, District 4 Supervisor
bkyger@rockinghamcountyva.gov

Michael A. Breeden, Vice-Chairman, District 5 Supervisor
mbreeden@rockinghamcountyva.gov

Re: Application of Carrizo (Marcellus) LLC to drill exploratory gas well in Bergton

Gentlemen:

This is further to our letter to you of April 12 on the issue. In the ensuing fifteen days, a good deal has happened in the world of hydrofracture gas drilling, and a good deal more information has come to our attention. Our conclusion is the same as that of Mr. Cameron, the geologist who spoke at the public hearing: hydrofracture drilling is too dangerous a method to justify its use in Rockingham County.

Those of you looking into the issue know that absorbing bad news coming out of hydrofracture drilling is like drinking out of a fire hose. Lately, it is constant. Without belaboring the point, I cite these incidents within the past few days alone:

135 wells poisoned in a Louisiana town; hundreds evacuated due to dwelling explosion hazard:
http://www.ksla.com/Global/story.asp?S=12333193

Pennsylvania Department of Environmental Protection finally forced a partial shutdown due to multiple violations including toxic spills on the surface and contamination of groundwater resulting in poisoned wells:

3112 N. Peary Street, Arlington, Virginia 22207-5327
Tel 703 875 3106
www.iasispartners.com

DIM0069477

http://www.portal.state.pa.us/portal/server.pt/community/news_releases/14288

As quoted in this Reuters article from November 20, 2009, the drilling company in Dimock simply took the position, "We don't see merit in these claims." http://www.reuters.com/article/idUSTRE5AJ2NB20091120

Drilling companies take the position that "fracking fluids" are not toxic, which is a patently absurd claim as illustrated by this story from a month ago about a fine levied against a driller for the deaths of 17 cattle that ingested it: http://www.shreveporttimes.com/apps/pbcs.dll/article?AID=2010100325018

The citizens of Dimock who suffered damage have sued the driller, but they do not expect that the damage will be repaired because it is evidently permanent, as acknowledged by their lawyers in this press conference: http://www.youtube.com/watch?v=az8lW6jH8SI

A copy of the lawsuit, and a related Consent Order that the drilling company signed with the Pennsylvania Department of Environmental Protection are attached.

If there were a way to repair the contamination, one would expect their counsel to establish the cost of it, and to claim it. The fact that it cannot be remediated is the reason that **the decision now facing the Rockingham County Board of Supervisors is as important to the future of the County as any it has ever faced.**

Many years of American case law establishes that

> One of the most prolific sources of contamination of subterranean waters is to be found in oil and gas wells, refineries and gas works, and also pipelines, through salt water coming from the wells, leakage of gas or oil, and the like, and in the vast majority of cases where such condition existed the gas or oil company was held liable, or subject to injunction. (38 A.L.R.2d 1265)

EPA believes, and so do we, that insufficient scientific data are available to serve as the foundation for a set of regulations that will prevent the disastrous consequences to communities nationwide seen especially in the last year due to hydrofracture drilling. Authorities at the national level recognize that they need more data and have just last month launched a major study of the matter. One Virginia county with no experience in the matter cannot possibly be expected to have adequate resources to draft a permit for hydrofracture drilling, and it cannot rely on the Virginia DMME to do so, given the lax DMME permit review provisions of the Virginia Oil & Gas Act of 1990. That body has already granted a permit without adequate protection.

Attached is a Tenth Circuit Court of Appeals decision from a year ago in which the Bureau of Land Management was found to have violated the National Environmental Policy Act in allowing gas drilling on federal lands without first conducting site-specific

environmental impact studies. Though the players are different, that is precisely the position in which Rockingham County is poised to put itself.

In conventional drilling, protection of the shaft using proper casing is the primary concern. There is always the danger that an accidental failure or damage to the casing by earth movement including seismic activity will pollute an aquifer even after a well is spent and capped, but the casing is the focus of attention.

But in hydrofracture drilling, two major additional hazards are introduced, and we are now seeing the disastrous results of gas drilling companies running vast, largely unregulated experiments on other people's land.

The first is the injection of toxic chemicals into the ground with no reasonable expectation that they will stay put and plenty of evidence that they will not. The second is fracturing rock deep beneath the surface in ways that cannot be observed or predicted, which has great potential to allow gas and fracking fluids to escape via manmade and naturally occurring fractures into aquifers. These two factors magnify risk exponentially.

Although drillers have been guarded about what is in their "fracking fluids," a number of the chemicals have been identified and include a host of toxic aromatic hydrocarbons such as benzene, toluene, ethyl benzene, and xylene. The Centers for Disease Control has a long list of the toxic effects of exposure just to benzene alone which is highly carcinogenic. More and more evidence shows that these and other chemicals contained in the fracking fluid as well as in the fracking wastewater, pose significant threats to human health and, for many, no safe dose exists such that any exposure is toxic.

We believe that while property owners should be allowed to harvest gas in a reasonable manner, the evidence is clear that hydrofracture drilling, especially when toxic chemicals are used, poses a severe and unacceptable hazard to the citizenry of the County and the Commonwealth.

Given the ever-increasing torrent of evidence about the harmful effects of hydrofracture drilling, **we strongly urge the Board of Supervisors to deny the application of Carrizo (Marcellus) LLC to drill in Rockingham County using other than conventional drilling methods**, at least until the report of the EPA is published and can be properly considered.

The attached Texas Tech Law Review article discusses cogently the many problems Texas is having as the result of non-EPA regulation of the harmful pollutants produced by hydrofracture drilling, and offers helpful suggestions for remedying the situation.

Finally, attached is a photograph of a water sample reported by Reuters to have been taken from an aquifer in Dimock, PA on March 7, 2009, after hydrofracture drilling. This came from a drinking water well. We sincerely hope that the Board of Supervisors will not allow this destruction and concomitant financial damage to be visited upon

Rockingham County. The experience of others is now well-documented and we ignore it at our peril. If the County allows hydrofracture drilling, it will be a self-inflicted wound.

History shows that by the time citizens wake up to the damage, and become furious at everyone involved in the process from the drillers to regulators to governing officials, the drillers are largely insulated, and in many cases gone, their financial gains safely in the bank. Taxpayers pay to clean up or, in the case of poisoned aquifers, pay but cannot clean.

The only way to prevent this in Rockingham County is to deny the Carrizo hydrofracture drilling permit.

Yours sincerely,

R. Brooke Lewis

I concur.

Kathryn M. Zunich, M.D.

enc: Water sample from aquifer in Dimock, PA – PDF p. 5
Lawsuit filed by citizens of Dimock, PA – PDF pp. 6-29
Consent Order issued by PA DEP – PDF pp. 30-49
10th Circuit Court of Appeals decision – PDF pp. 50-83
Texas Law Review article – PDF pp. 84-108

cc: Joe Paxton, County Administrator
jpaxton@rockinghamcountyva.gov

Thomas H. Miller, County Attorney
tmiller@rockinghamcountyva.gov

Diana Stultz, Zoning Administrator
dstultz@rockinghamcountyva.gov

Water sample reported by Reuters to have been taken from an aquifer in Dimock, PA on March 7, 2009, after hydrofracture drilling.
This came from a drinking water well.

UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

NORMA J. FIORENTINO, CRAIG SAUTNER and JULIA SAUTNER, Individually, and as the Parents and Natural Guardians of [redacted] and [redacted], MICHAEL ELY and ANDREA ELY, Individually, and as the Parents and Natural Guardians of [redacted] and [redacted], RAY HUBERT and VICTORIA HUBERT, Individually, and as the Parents and Natural Guardians of [redacted] and [redacted], RONALD CARTER, SR. and JEAN CARTER, WILLIAM T. ELY and SHEILA A. ELY, SAMANTHA SEBJAN, Individually, and as the Parent and Natural Guardian of [redacted], JIMMY LEE SWITZER and VICTORIA SWITZER, NOLEN SCOTT ELY and MONICA LAURA MARTA-ELY, Individually, and as the Parents and Natural Guardians of [redacted], JESSICA ELY and JUSTIN ELY, NOLEN SCOTT ELY as the Executor of the Estate of KENNETH RAY ELY, RICHARD SEYMOUR and WENDY SEYMOUR, TODD CARTER and JEANNETTE CARTER, PATRICIA FARNELLI, Individually, and as Parent and Natural Guardian of [redacted], [redacted], [redacted], [redacted] and [redacted] ERIK B.J. ROOS and SUSAN M. ROOS, FRANK NOBLE and KAREN NOBLE, Individually, and as the Parents and Natural Guardians of [redacted], RAYMOND KEMBLE, and EMMAGENE E. SAMOY-ELY,

Plaintiffs,

-against-

CABOT OIL & GAS CORPORATION and GAS SEARCH DRILLING SERVICES CORPORATION,

Defendants.

Hon.
Civil Action No.

Plaintiffs, through their undersigned attorneys, for their Complaint allege the following:

INTRODUCTION

1. Plaintiffs complain, *inter alia*, of environmental contamination and polluting events caused by the conduct and activities of the Defendants herein, who caused the releases,

spills, and discharges of combustible gases, hazardous chemicals, and industrial wastes from its various oil and gas drilling facilities. These releases, spills and discharges caused the Plaintiffs and their property to be exposed to such hazardous gases, chemicals, and industrial wastes and caused damage to the natural resources of the environment in and around the Plaintiffs' properties, causing Plaintiffs to incur health injuries, loss of use and enjoyment of their property, loss of quality of life, emotional distress, and other damages. Moreover, the Defendants failed to fulfill their contractual obligations with the Plaintiffs and engaged in fraudulent conduct, as more fully set forth herein.

JURISDICTION AND VENUE

2. This Court has jurisdiction over this matter pursuant to 28 U.S.C. § 1332. Jurisdiction is proper in that the amount in controversy with respect to each Plaintiff individually exceeds the sum or value of $75,000.00, exclusive of interest and costs, and is between citizens of different states.

3. Venue in this District is proper under 28 U.S.C. §1391.

PARTIES

4. At all times mentioned herein, Plaintiff, NORMA J. FIORENTINO, was and is a citizen of the State of Pennsylvania, residing at RR 6, Box 6212, Montrose, PA 18801.

5. At all times mentioned herein, Plaintiffs, CRAIG SAUTNER and JULIA SAUTNER, were and are citizens of the State of Pennsylvania, residing at RR 6, Box 6147, Montrose, PA 18801. These Plaintiffs reside with their minor children, [redacted] and [redacted], and bring this action individually and on their behalf as parents and natural guardians.

6. At all times mentioned herein, Plaintiffs, MICHAEL ELY and ANDREA ELY, were and are citizens of the State of Pennsylvania, residing at RR, 6 Box 3176, Montrose, PA 18801. These Plaintiffs reside with their minor children, [redacted] and [redacted], and bring this action individually and on their behalf as parents and natural guardians.

7. At all times mentioned herein, Plaintiffs, RAY HUBERT and VICTORIA HUBERT, were and are citizens of the State of Pennsylvania, residing at P.O. Box 111, Carter Road, Dimock, PA 18816. These Plaintiffs reside with their minor children, [redacted] and [redacted], and bring this action individually and on their behalf as parents and natural guardians.

8. At all times mentioned herein, Plaintiffs, RONALD CARTER, SR. and JEAN CARTER, were and are citizens of the State of Pennsylvania, residing at P.O. Box 82, Dimock, PA 18816.

9. At all times mentioned herein, Plaintiffs, WILLIAM T. ELY and SHEILA A. ELY, were and are citizens of the State of Pennsylvania, residing at RR 6, Box 6176, Montrose, PA 18801.

10. At all times mentioned herein, Plaintiff, SAMANTHA SEBJAN, was and is a citizen of the State of Pennsylvania, residing at RR 6, Box 6176, Montrose, PA 18801. This Plaintiff resides with her minor child, [redacted], and brings this action individually and on his behalf as parent and natural guardian.

11. At all times mentioned herein, Plaintiffs, JIMMY LEE SWITZER and VICTORIA SWITZER, were and are citizens of the State of Pennsylvania, residing at P.O. Box 113, Dimock, PA 18801.

12. At all times mentioned herein, Plaintiffs, NOLEN SCOTT ELY and MONICA LAURA MARTA-ELY, were and are citizens of the State of Pennsylvania, residing at P.O. Box 39, Carter Road, Dimock, PA 18816. These Plaintiffs reside with their minor children, [redacted] and bring this action individually and on their behalf as parents and natural guardians.

13. At all times mentioned herein, Plaintiff, KENNETH RAY ELY, was a citizen of the State of Pennsylvania, residing at P.O. Box 23, Meshoppen Creek Road, Dimock, PA 18816. KENNETH RAY ELY died on May 20, 2009. On May 29, 2009, his son, NOLEN SCOTT ELY, was appointed the Executor of KENNETH RAY ELY's estate, for which Plaintiff NOLEN SCOTT ELY brings this action, including heirs and next of kin deriving rights therefrom.

14. At all times mentioned herein, Plaintiffs, RICHARD SEYMOUR and WENDY SEYMOUR, were and are citizens of the State of Pennsylvania, residing at RR 6, Box 6177-A, Montrose, PA 18801.

15. At all times mentioned herein, Plaintiffs, TODD CARTER and JEANNETTE CARTER, were and are citizens of the State of Pennsylvania, residing at P.O. Box 185, Dimock, PA 18816.

16. At all times mentioned herein, Plaintiff, PATRICIA FARNIELLI, was and is a citizen of the State of Pennsylvania, residing at RR 6, Box 6151, Montrose, PA 18801. This Plaintiff resides with her minor children, [redacted] and brings this action individually and on their behalf as parent and natural guardian.

17. At all times mentioned herein, Plaintiffs, ERIC B.J. ROOS and SUSAN M. ROOS, were and are citizens of the State of Pennsylvania, residing at RR 6, Box 6194, Montrose, PA 18801.

18. At all times mentioned herein, Plaintiffs, FRANK NOBLE and KAREN NOBLE, were and are citizens of the State of Pennsylvania, residing at RR1 Box 489, Hop Bottom, PA 18824. These Plaintiffs reside with their minor child, [redacted], and bring this action individually and on her behalf as parents and natural guardians.

19. At all times mentioned herein, Plaintiff, RAYMOND KEMBLE, was and is a citizen of the State of Pennsylvania, residing at RR 6, Box 6177, Montrose, PA 18801.

20. At all times mentioned herein, Plaintiff, EMMAGENE E. SAMOY-ELY, was and is a citizen of the State of Pennsylvania, residing at P.O. Box 23, Meshoppen Creek Road, Dimock, PA 18816.

21. The aforementioned Plaintiffs are hereinafter collectively referred to as "Plaintiffs".

22. At all times mentioned herein, Defendant, CABOT OIL & GAS CORPORATION ("Cabot"), was and is a Delaware Corporation, with its headquarters and principal place of business located at 1200 Enclave Parkway, Houston, TX. This Defendant engages in various oil and gas exploration and production activities in the State of Pennsylvania.

23. At all times mentioned herein, Defendant, GAS SEARCH DRILLING SERVICES CORPORATION ("Gas Search"), was and is a wholly owned, operated, and controlled subsidiary of Defendant, CABOT OIL & GAS CORPORATION. Defendant, GAS SEARCH DRILLING SERVICES CORPORATION, engages in the drilling and servicing of oil

and gas wells, and has a mailing address at 466 Airport Industrial Park, Parkersburg, WV. Defendants, Cabot and Gas Search, are hereinafter collectively referred to as "Defendants".

GENERAL ALLEGATIONS

24. At all times mentioned herein, Defendants engaged in drilling activities, and owned and operated gas wells, at least sixty-two (62) such gas wells at the present time, within a nine-square mile tract (the "Dimock Gas Well Area") in Dimock Township, Susquehanna County, Pennsylvania wherein Plaintiffs own property and/or reside.

25. In order to obtain the legal right to drill on Plaintiffs' property, and extract natural gas from Plaintiffs' property, Cabot obtained from each of the Plaintiffs an executed oil and gas lease agreement and addendum thereto (hereinafter referred to as "gas lease").

26. Each gas lease was solicited by a representative of Cabot who came to each of the Plaintiffs' homes, unannounced, commencing in 2006.

27. The gas leases were not negotiated at "arm's length".

28. In the process of obtaining the gas leases, Cabot expressly warranted to each of the Plaintiffs the following, upon which Plaintiffs relied, to their detriment, as the basis for the bargain:

a. That Cabot would reasonably and thoroughly test Plaintiffs' domestic water supply prior to and following commencement of drilling operations in order to ensure that the water supply will not be adversely affected by said operations;

b. That Cabot would timely and fully disclose in all instances the results of such reasonable and thorough water tests to Plaintiffs;

c. That Plaintiffs' person, property, and land resources would remain for themselves and future generations substantially preserved and undisturbed in the face of said operations;

d. That Plaintiffs' quality of life, and use and enjoyment of their properties would not be disrupted or adversely affected for themselves and future generations by said operations;

e. That in the unlikely event that it was determined that Cabot's operations had adversely affected Plaintiffs' water supply, Cabot would immediately disclose that information and, at its expense, take all steps necessary to return the Plaintiffs' water supply to pre-drilling conditions;

f. That Cabot would remain at all times in substantial compliance with all state and federal laws and regulations governing safe oil and gas drilling practices; and

g. That Plaintiffs would receive from Cabot timely and regular payments of monetary compensation commensurate with the amount of natural gas extracted from Plaintiffs' property, which payments would be calculated according to a transparent formula with verifying data.

29. At all times mentioned herein, the gas wells drilled, owned and operated by Defendants in the Dimock Gas Well Area did and do include the following (collectively referred to hereinafter as "Defendants' Gas Wells"):

a. Baker 1 Well

b. Gesford 3 Well

c. Costello 1 and 2 Wells

d. Gesford 9 Well

e. Gesford 2 Well

f. Lewis 2 Well

g. Ratzel 3V Well

h. Ratzel 1H Well

i. Ely 2, 4 and 6 Wells, and

j. Black 2H Well.

30. At all times mentioned herein, in order to extract natural gas from the Defendants' Gas Wells, Defendants used a drilling process known as hydraulic fracturing. Hydraulic fracturing requires the discharge of enormous volumes of hydraulic fracturing fluids otherwise known as "fracking fluid" or "drilling mud" into the ground under extreme pressure in order to dislodge and discharge the gas contained under the ground.

31. The composition of fracking fluid and/or drilling mud includes hazardous chemicals that are carcinogenic and toxic.

32. Diesel fuel and lubricating materials, also consisting of hazardous chemicals, are utilized during drilling and well operations.

33. Defendants located Defendants' Gas Wells within the following proximities to Plaintiffs' property, home and water supply wells:

a. Plaintiff NORMA FIORENTINO's property, home and water supply are within 1300 feet of Baker 1 Well.

b. Plaintiffs CRAIG SAUTNER and JULIA SAUTNER's property, home and water supply are within 1000 feet of Baker 1 Well.

c. Plaintiffs MICHAEL ELY and ANDREA ELY's property, home and water supply are within 1300 feet of Gesford 3 Well, Costello 1 Well, and Gesford 9 Well.

d. Plaintiffs RAY HUBERT and VICTORIA HUBERT's property, home and water supply are within 1000 feet of Gesford 3 Well and Gesford 9 Well.

e. Plaintiffs RONALD CARTER, SR. and JEAN CARTER's property, home and water supply are within 1000 feet of Gesford 2 Well.

f. Plaintiffs WILLIAM ELY and SHEILA ELY's property, home and water supply are within 1000 feet of Costello 1 Well.

g. Plaintiff SAMANTHA SEBJAN's residence and water supply are within 1000 feet of Costello 1 Well.

h. Plaintiffs JIMMY LEE SWITZER and VICTORIA SWITZER's property, home and water supply are within 1000 feet of Lewis 2 Well.

i. Plaintiffs NOLEN SCOTT ELY and MONICA LAURA MARTA-ELY's property, home and water supply are within 1000 feet of Gesford 3 Well and Gesford 9 Well.

j. Plaintiff-decedent KENNETH RAY ELY's property has upon it Ely 2, 4, and 6 Wells are within 1000 feet of the Plaintiff-decedent's home, spring water supply and rock quarry.

k. Plaintiffs RICHARD SEYMOUR and WENDY SEYMOUR's property, home, agricultural business and water supply are within 1000 feet of Costello 1 Well.

l. Plaintiffs ERIC ROOS and SUSAN ROOS's property, home and water supply are within 1000 feet of Ratzel 3V Well, and Ratzel 1H Well.

m. Plaintiffs TODD CARTER and JEANNETTE CARTER's residence and water supply are within 1000 feet of Gesford 2 Well.

n. Plaintiff PATRICIA FARNELLI's property, home and water supply are within 1000 feet of Gesford 2 and 3 Wells.

o. Plaintiffs FRANK NOBLE and KAREN NOBLE's property, home and water supply are within 1000 feet of Black 2H Well.

p. Plaintiff RAYMOND KEMBLE's property, home and water supply are within 1000 feet of Costello 2 Well.

q. Plaintiff EMMAGENE E. SAMOY-ELY's residence and spring water supply are within 1000 feet of Ely 2 Well.

34. At all times mentioned herein, Plaintiffs rely on ground water wells for drinking, bathing, cooking, washing and other daily residential and business uses.

35. At all times mentioned herein, and upon information and belief, Defendants were otherwise negligent and/or grossly negligent in their drilling, construction and operation of Defendants' Gas Wells such that:

a. Combustible gas was caused to be released into the headspaces of the water wells that provide water to Plaintiffs;

b. Elevated levels of dissolved methane were caused to be present in wells that provide water to Plaintiffs;

c. Natural gas was caused to be discharged into and caused to enter Plaintiffs' fresh groundwater;

d. Excessive pressures were caused to be present within the gas wells near Plaintiffs' homes and water wells;

e. Pollutants and industrial and/or residual waste was caused to be discharged into the ground or into the waters near Plaintiffs' homes and water wells;

f. Diesel fuel was caused to be spilled onto the ground near Plaintiffs' homes and water wells;

g. Drilling mud was caused or allowed to be discharged into diversion ditches near Plaintiffs' homes and water wells;

h. An explosion was caused to occur in an outside, below-grade water well pit on or about January 1, 2009 on the property of Plaintiff, NORMA FIORENTINO, causally related to accumulation of evaporated methane gas in her wellhead; and

i. A fire in the well vent was caused to occur on the property of Plaintiffs, MICHAEL ELY and ANDREA ELY, which was causally related to the accumulation and re-accumulation of evaporated methane gas in their wellhead.

j. Three significant spills of pollutants were caused to occur within the Dimock Gas Well Area within a ten day period.

k. On September 24, 2009, the Pennsylvania Department of Environmental Protection issued an Order to Cabot requiring that Cabot cease all fracturing/well stimulation activities within Susquehanna County, Pennsylvania, and near the Dimock Gas Well Area, which prohibition lasted for approximately three weeks.

l. Following many of the aforementioned spills, discharges, releases and other activities, Defendants failed to inform Plaintiffs, other nearby residents, emergency response personnel, and public officials, or take other reasonable measures to protect Plaintiffs, the public, and the environment.

36. Upon information and belief, at all times mentioned herein the release and discharges of gas, presence of excessive well pressures as well, explosion and fire were the result of improper or insufficient cement casing of Defendants' Gas Wells located near Plaintiffs' homes, and discharges and spills of industrial and/or residual waste, diesel fuel and other pollutants and hazardous substances were the result of Defendants' negligence, including its negligent planning, training and supervision of staff, employees and/or agents.

37. Upon information and belief, these aforementioned spills, discharges, releases and other activities include, but are not limited to, various hazardous chemicals, including 1,2,4-trimethylbenzen exceeding state wide health standards for saturated soil, the discharge into surface water of aluminum in amounts exceeding the Pennsylvania Department of Environmental Protection's Water Quality Criteria, the discharge of iron exceeding the Pennsylvania State Department of Environmental Protection's Water Quality Criteria, and the discharge of N-propylbenzene, and P-isopropyl toluene.

38. Upon information and belief, Defendants have maintained their activities in such a negligent and improper manner as to violate various Pennsylvania state laws and the Rules and Regulations promulgated there under, including but not limited to the Pennsylvania Clean Streams Law, 35 P.S. §§691.1, *et seq.*, the Pennsylvania Solid Waste Management Act, 35 P.S. §§ 6018.101, *et seq.*, the Pennsylvania Oil and Gas Act, 58 P.S. §§ 601.101, *et seq.*, the Pennsylvania Hazardous Sites Cleanup Act ("HSCA"), 35 P.S. §§ 6020.101, *et seq.*; the Federal

Solid Waste Disposal Act, 42 USC §§ 6901, *et seq.*; the Federal Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC §§ 9601, *et seq.*; and the Federal Water Pollution Control Act, 33 USC §§ 1251, *et seq.*

39. Despite the language of the gas leases that requires Cabot to test Plaintiffs' domestic water supplies prior to and following commencement of drilling operations in order to ensure that the water supplies have not be adversely affected by said operations, Cabot failed to fully engage in such testing activities in violation of the gas leases.

40. Cabot has failed to fulfill its responsibility under the gas leases to take all steps necessary to return the Plaintiffs' water supplies to pre-drilling condition.

41. As a result of the aforementioned releases, spills, discharges, and non-performance attributed to and caused solely by Defendants' negligent and/or grossly negligent drilling and production activities and fraudulent solicitation of the gas leases, Plaintiffs and their properties have been seriously harmed, to wit:

a. Plaintiffs' water supplies are contaminated.

b. Plaintiffs have been and continue to be exposed to combustible gases, hazardous chemicals, threats of explosions and fires.

c. Plaintiffs' property has been harmed and diminished in value.

d. Plaintiffs have lost the use and enjoyment of their property, and the quality of life they otherwise enjoyed.

e. Plaintiffs have been caused to become physically sick and ill, manifesting neurological, gastrointestinal and dermatological symptoms, as well demonstrating blood study results consistent with toxic exposure to, for example, heavy metals.

f. Plaintiffs live in constant fear of future physical illness, particularly with respect to the health of their minor children and grandchildren.

g. Plaintiffs live in a constant state of severe emotional distress consistent with post traumatic stress syndrome.

42. As a result of the foregoing and following allegations and Causes of Action, Plaintiffs seek, *inter alia*, a preliminary and permanent injunction barring Defendants from engaging in the acts complained of and requiring Defendants to abate the nuisances, unlawful conduct, violations and damages created by them, and an order requiring Defendants to pay compensatory damages, punitive damages, the cost of future health monitoring, litigation fees and costs, and to provide any further relief that the Court may find appropriate.

CAUSES OF ACTION

First Cause of Action: Hazardous Sites Cleanup Act

43. Plaintiffs repeat and reallege the allegations of paragraph "1" through "42" of this Complaint, as though set forth in this paragraph at length.

44. The locations of the releases of hazardous substances as set forth above constitute "sites" as defined by the Pennsylvania Hazardous Sites Cleanup Act ("HSCA"), 35 P.S. §§ 6020.101, *et. seq.*

45. The spills, releases, and discharges set forth above constitute "releases" of hazardous substances and contaminants under HSCA.

46. At all relevant times, Defendants owned and/or operated the sites, and/or Defendants owned or possessed and arranged for the disposal, treatment or transport for disposal or treatment of the hazardous substances, under the HSCA.

47. Defendants are "responsible persons" responsible for the release or threatened release of hazardous substances, under HSCA.

48. As set forth above, Defendants have caused, and continue to cause, releases or substantial threats of releases, of hazardous substances or contaminants which present a substantial danger to the public health or safety or the environment, under HSCA.

49. Pursuant to Section 507, 702 and 1101 of HSCA, 35 P.S. §§ 6020.507, 6020.507 and 6020.1101, Defendants are strictly liable for costs incurred by Plaintiffs to respond to Defendants' releases or threatened releases of hazardous substances and contaminants, including but not limited to the cost of a health assessment or health effects study, medical monitoring, and interest.

50. The above releases and threats of releases of hazardous substances and contaminants by Defendants constitute public nuisances under Section 1101 of HSCA, 35 P.S. § 6020.1101.

51. The above releases and threats of releases of hazardous substances by Defendants constitute unlawful conduct under Section 1108 of HSCA, 35 P.S. §6020.1108.

52. The above releases and threats of releases of hazardous substances and contaminants by Defendants have caused and threaten to cause personal injury and property damage to Plaintiffs.

53. Defendants, by reason of these releases and threats of releases, are liable for all the damages and injuries to Plaintiffs proximately caused by the releases and threats of releases, and to remediate the releases, threats of releases, and resultant contamination.

Second Cause of Action: Negligence

54. Plaintiffs repeat and reallege the allegations of paragraph "1" through "53" of this Complaint, as though set forth in this paragraph at length.

55. Defendants, by violating the various laws indicated herein, engaged in negligence *per se*.

56. Defendants owed a duty of care to Plaintiffs to responsibly drill, own and operate Defendants' Gas Wells, respond to spills and releases of hazardous chemicals, and prevent such releases and spills, and take all measures reasonably necessary to inform and protect the public, including Plaintiffs, from the contamination of their water supply and exposure to hazardous chemicals and combustible gases.

57. Defendants, including their officers, agents, and/or employees knew, or in the exercise of reasonable care should have known, their operations would result in the release or the threat of release of combustible gases and hazardous chemicals.

58. Defendants, including their officers, agents, and/or employees knew, or in the exercise of reasonable care should have known, of the dangerous, offensive, hazardous or toxic nature of their operations.

59. Defendants, including their officers, agents, and/or employees knew, or in the exercise of reasonable care should have known, of the dangerous, offensive, hazardous or toxic nature of the combustible gases and hazardous chemicals released by Defendants, and that they were capable of causing serious personal injury to persons coming into contact with them, polluting the water supplies of the Plaintiffs, damaging property and causing natural resource damage.

60. Defendants, including their officers, agents, and/or employees, should have taken reasonable precautions and measures to prevent or mitigate the releases and spills, including the design and operation of process systems so that such releases and spills did not occur, as well as adequate planning for such spills or releases or other emergencies.

61. Defendants, including their officers, agents, and/or employees knew, or in the exercise of reasonable care should have known, that once a spill or release occurred, they should take reasonable measures to protect the public, including by issuing immediate and adequate warnings to nearby residents, including Plaintiffs, to emergency personnel and to public officials.

62. Defendants, including their officers, agents, and/or employees knew, or in the exercise of reasonable care should have known, that the spills and releases caused by Defendants' negligent conduct, and the resultant harm to Plaintiffs and their property, were foreseeable and inevitable consequences of Defendants' acts and/or omissions in the manner in which they engaged in their gas drilling and production activities.

63. Defendants, including their officers, agents, and/or employees, acted unreasonably and negligently in causing the releases and spills and the contamination of Plaintiffs' water supplies and property, and failed to take reasonable measures and precautions necessary to avoid and/or respond to the spills and releases of hazardous chemicals, and to protect the public, including the Plaintiffs, from exposure to these combustible gases and hazardous chemicals.

64. Defendants' acts and/or omissions mentioned herein were the direct and proximate cause of the damages and injuries to Plaintiffs alleged herein.

65. Contamination resulting from the Defendants' negligence continues to this day, and is likely to continue into the future, unless injunctive relief is awarded by this Court abating

the nuisances and enjoining Defendants from engaging in their drilling and production activities in the Dimock Gas Well area.

66. Some or all of the acts and/or omissions of Defendants were grossly, recklessly and wantonly negligent, and were done with utter disregard for the consequences to Plaintiffs and other persons, and therefore Plaintiffs are entitled to an award of punitive damages.

67. Plaintiffs in no way contributed to the damages and injuries they have sustained.

68. Defendants, by reason of their negligence, are liable for all the damages and injuries to Plaintiffs proximately caused by the spills and releases of hazardous chemicals indicated herein, and to remediate the contamination caused by such spills and releases.

Third Cause of Action: Private Nuisance

69. Plaintiffs repeat and reallege the allegations of paragraph "1" through "68" of this Complaint, as though set forth in this paragraph at length.

70. Defendants, by their acts and/or omissions, including those of their officers, agents, and/or employees, have caused an unreasonable and substantial interference with Plaintiffs' right to use and enjoy Plaintiffs' property.

71. Defendants, including their officers, agents and/or employees, have created and maintained a continuing nuisance in the Dimock gas well area, by allowing the gas wells to exist and operate in a dangerous and hazardous condition, allowing the spills and releases, and/or the threats of spills and releases, of hazardous chemicals, and allowing the spills and releases to continue to spread to surrounding areas, including Plaintiffs' properties and drinking water supplies, resulting in injuries to Plaintiffs' health, well being and property.

72. This nuisance continues to this day, and is likely to continue into the future.

73. Defendants, by reason of this private nuisance, are liable for all the damages and injuries to Plaintiffs proximately caused by the spills, releases and contamination, and to remediate the contamination.

Fourth Cause of Action: Strict Liability

74. Plaintiffs repeat and reallege the allegations of paragraph "1" through "73" of this Complaint, as though set forth in this paragraph at length.

75. The hazardous chemicals and combustible gases used, processed, and stored by Defendants are of a toxic and hazardous nature capable of causing severe personal injuries and damages to persons and property coming in contact with them, and therefore are ultra hazardous and abnormally dangerous.

76. The use, processing, and storage of hydro-fracturing fluid at Defendants' Gas Wells, adjacent to or on residential properties, was and continues to be an abnormally dangerous and ultra hazardous activity, subjecting persons coming into contact with the hazardous chemicals and combustible gases to severe personal injuries, regardless of the degree of caution Defendants might have exercised.

77. Defendants , by engaging in abnormally dangerous and ultra hazardous activities, are strictly liable with regard to fault for all the damages and injuries to Plaintiffs proximately caused by the spills, releases and contamination caused byDefendants, and to remediate the contamination.

Fifth Cause of Action: Breach of Contract

78. Plaintiffs repeat and reallege the allegations of paragraph "1" through "77" of this Complaint, as though set forth in this paragraph at length.

79. As previously indicated, the gas leases required Cabot to test the Plaintiffs' water supply following commencement of drilling operations on the premises in order to ensure that the water supplies would not be adversely affected by Cabot's operations.

80. Under the gas leases, in the event it is determined that said operations adversely affected Plaintiffs' water supply, then Cabot is required to immediately, at its own expense, take all steps necessary to return the water supply to pre-drilling conditions.

81. Cabot has failed to perform its obligations as required by the gas leases, in that Cabot has not fully tested Plaintiffs' water supplies for various substances including but not limited to combustible gases, methane gas, and hazardous chemicals used in the hydro-fracturing process, once it was suspected that such drilling operations had caused spills or leaks into Plaintiffs' domestic water supplies.

82. Furthermore, Cabot has failed to perform as required by the gas leases by immediately, at its own expense, taking all steps necessary to return Plaintiffs' water supplies to pre-drilling conditions.

83. In addition, as previously indicated, Cabot expressly warranted to Plaintiffs that they would receive timely, certain and regular compensation in the form of royalty checks representing a certain percentage of the value of natural gas extracted from Plaintiffs' property.

84. Cabot' payments to Plaintiffs have been untimely, irregular and declining, without opportunity or mechanism to verify their correctness and accuracy.

85. Finally, as previously indicated, Cabot expressly warranted to Plaintiffs that their land, person and environs would remain safe and undisturbed despite its drilling activities.

86. Cabot proximately caused spills and releases onto Plaintiffs' property, has contaminated Plaintiffs' water, cause physical harm to Plaintiffs and reduced Plaintiffs' quality of life.

87. As such, Cabot is in breach of the gas leases.

88. Cabot, by reason of this breach of contract, is liable for all damages and injuries to Plaintiffs caused by such breaches of contract, and is required to make Plaintiffs whole, put Plaintiffs back into the same condition they would have been if the contract was not breached, and remediate the contamination.

Sixth Cause of Action: Fraudulent Misrepresentation

89. Plaintiffs repeat and reallege the allegations of paragraph "1" through "88" of this Complaint, as though set forth in this paragraph at length.

90. In order to induce Plaintiffs to lease their natural gas rights, Cabot, through its officers, agents and/or employees, misstated certain material facts and omitted other material facts, including the amount, timing and regularity of monetary compensation, or "royalties" Plaintiffs would receive as a result of drilling, and risks to Plaintiffs' person and property as a result of the well drilling process, including the fact that fluids containing pollutants and hazardous substances used in the hydraulic fracturing process, as well as gas and gas components, could escape into their ground water wells to their harm and detriment.

91. These statements and omissions were made for the purpose of inducing reliance on the part of Plaintiffs.

92. These statements and omissions were material to the transaction, *to wit*, obtaining Plaintiffs' agreement to lease their gas rights.

93. Plaintiffs justifiably relied on these statements and omissions, to their detriment.

94. Cabot, by reason of fraudulent misrepresentation, is liable for all damages and injuries to Plaintiffs caused by their justifiable reliance, as well as punitive damages.

Seventh Cause of Action: Medical Monitoring Trust Funds

95. Plaintiffs repeat and reallege the allegations of paragraph "1" through "94" of this Complaint, as though set forth in this paragraph at length.

96. As set forth above, as a result of Defendants' negligent acts and/or omissions, plaintiffs have been exposed to hazardous substances.

97. The levels of hazardous substances to which plaintiffs have been exposed are greater than normal background levels.

98. As a proximate result of their exposure to such hazardous substances, Plaintiffs have a significantly increased risk of contracting a serious latent disease.

99. A monitoring procedure exists that makes the early detection of the disease possible.

100. Such early detection will help to ameliorate the severity of the disease. The prescribed monitoring regime is different from that normally recommended in the absence of the exposure.

101. The prescribed monitoring regime is reasonably necessary according to contemporary medical opinion.

Eighth Cause of Action: Gross Negligence

102. Plaintiffs repeat and reallege the allegations of paragraph "1" through "101" of this Complaint, as though set forth in this paragraph at length.

103. The actions of Defendants, including their officers, agents and/or employees, were grossly, recklessly and wantonly negligent, and were done with utter disregard for the consequences to Plaintiffs and other persons.

104. Defendants, by reason of their gross negligence, are liable for all the damages and injuries to Plaintiffs proximately caused by the spills, releases and contamination, to remediate the contamination, and for punitive damages.

WHEREFORE, upon the aforesaid Causes of Action, Plaintiffs seek the following relief:

i. The reasonable and necessary costs of remediation of the hazardous substances and contaminants;

ii. A preliminary and permanent injunction barring Defendants from engaging in the acts complained of and requiring Defendants to abate the aforesaid nuisances, wrongful acts, violations and damages created by them within the Dimock Gas Well Area;

iii. The cost of future health monitoring;

iv. Compensatory damages for the loss of property value, damage to the natural resources of the environment in and around the Plaintiffs' properties, medical costs, loss of use and enjoyment of their property, loss of quality of life, emotional distress, personal injury and such other reasonable damages incidental to the claims.

v. Punitive damages for Defendants' for fraudulent misrepresentation and gross negligence;

vi. Plaintiffs' litigation costs and fees; and

vii. any further relief that the Court may find appropriate.

DEMAND FOR JURY TRIAL

Plaintiffs hereby demand that the trial of all issues be heard by a Judge sitting with jury in accordance with the Federal Rules of Civil Procedure.

RESPECTFULLY SUBMITTED,

THE JACOB D. FUCHSBERG LAW FIRM, LLP
500 Fifth Avenue, 45th Floor
New York, New York 10110-0393
212 869 3500

BY LESLIE L. LEWIS, ESQ.
ALAN L. FUCHSBERG, ESQ.

ZARWIN BAUM DEVITO KAPLAN SCHAER TODDY, P.C.
1818 Market Street, 13th Floor
Philadelphia, Pennsylvania 19103
215 569 2800

BY PAUL M. SCHMIDT, ESQ.

RICHARD J. LIPPES AND ASSOCIATES
11089 Delaware Avenue
Buffalo, New York 14209
716 884 4800

DATED: November 19, 2009

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of:

Cabot Oil and Gas Corporation	:	Clean Streams Law,
Dimock and Springville Townships	:	the Oil and Gas Act, and
Susquehanna County	:	the Solid Waste Management Act

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is entered into this 4th day of November 2009, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection ("Department") and Cabot Oil and Gas Corporation ("Cabot").

Findings

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce The Clean Streams Law, Act of June 22, 1937, P.L. 1987, *as amended*, 35 P.S. §§691.1-691.1001 ("Clean Streams Law"); the Oil and Gas Act, Act of December 19, 1984, P.L. 1140, *as amended*, 58 P.S. §§601.101-601.605 ("Oil and Gas Act"); the Solid Waste Management Act, Act of July 7, 1980, P.L. 380, *as amended*, 35 P.S. §§6018.101-6018.1003 ("Solid Waste Management Act"); Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. §§510-17 ("Administrative Code"); and the rules and regulations promulgated thereunder ("Regulations").

B. Cabot is a Delaware corporation registered to do business in Pennsylvania and is engaged in various oil and gas exploration and production activities in Pennsylvania, including in Dimock and Springville Townships, Susquehanna County. Cabot maintains a mailing address of 5 Penn Center West, Suite 401, Pittsburgh, PA 15276.

BACKGROUND ON GAS MIGRATION

C. Cabot is the "owner" and "operator," as those terms are defined in Section 103 of the Oil and Gas Act, 58 P.S. §601.103, of certain gas wells, or has received permit authorization from the Department to drill wells, within an area defined as follows: South of 41 degrees 45 minutes latitude; East of -75 degrees 54 minutes 11 seconds longitude; North of 41 degrees 42 minutes 14 seconds latitude; and West of -75 degrees 50 minutes 48 seconds longitude in Dimock and Springville Townships, Susquehanna County, Pennsylvania ("Affected Area"). A list of Cabot's drilled wells and wells permitted but not drilled in the Affected Area are listed as Exhibit A and incorporated herein ("Cabot Wells"). A map of the Affected Area is attached as Exhibit B and incorporated herein.

D. On January 1, 2009, an explosion was reported in an outside, below-grade water well pit at a home located in the Affected Area near the intersection of State Route 2024 and Carter Road in Dimock Township, Susquehanna County.

E. Due to the close proximity of the home described in Paragraph D, above, to the Cabot Wells, the Department began an investigation to determine if the incident was the result of gas drilling activities by Cabot.

F. During its investigation since January 2009, the Department documented that combustible gas was present in the headspaces of wells that provide drinking water to certain homes located near the Cabot Wells, and/or documented that elevated levels of dissolved methane was present in wells that provide drinking water to certain homes located near the Cabot Wells.

G. On February 27, 2009, the Department issued Cabot a Notice of Violation for, among other things, discharging natural gas, a polluting substance, to waters of the Commonwealth without authorization, and for failing to prevent gas from entering fresh groundwater.

H. On May 13, 2009, the Department issued Cabot a Notice of Violation for failing to properly cement casing at certain of the Cabot Wells, and for failing to prevent gas from entering groundwater from the Cabot Well known as the Gesford 3 Well.

Excessive Pressure/Improper or Insufficient Cemented Casings

I. Based upon its investigation since January 2009, the Department has determined the following:

1. Two Cabot Wells known as the Baker 1 Well and the Ely 4 Well had excessive pressures.

2. The Cabot Wells known as the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well have insufficient or improper cemented casings that allow gas to vent between various cemented casings and/or from behind the surface casing.

3. The Cabot Wells known as the Brooks 1H Well, Ely 5H Well, and Ely 7V Well have gas venting in the cellar of these Wells indicating that these Wells may have insufficient or improper cemented casings.

4. As of the date of this Consent Order and Agreement, Cabot has not corrected the insufficient or improper cemented casings at the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well.

Pollution of Private Water Supplies

J. During its investigation since January 2009, the Department has collected samples from wells that provide drinking water to 13 homes located near the Cabot Wells ("Affected Water Supplies"), and these samples contained elevated levels of dissolved methane gas. In addition, the Department identified combustible gas in the headspaces of seven of the Affected Water Supplies. A list identifying the Affected Water Supplies is attached as Exhibit C and incorporated herein.

K. Based upon its investigation since January 2009, the Department has determined the following:

1. Ten of the Affected Water Supplies are less than 1,000 feet from one or more of the Cabot Wells. These 10 Affected Water Supplies have elevated levels of dissolved methane and/or the presence of combustible gas in the drinking water wells.

2. The presence of dissolved methane and/or combustible gas in the 10 Affected Water Supplies occurred within six months of completion of drilling of one or more of the Cabot Wells. As such, Cabot is presumed to be responsible for the pollution to these 10 Affected Water Supplies, pursuant to Section 208(c) of the Oil and Gas Act, 58 P.S. §601.208(c).

3. Three of the Affected Water Supplies are within 1,300 feet of one or more of the Cabot Wells. Based upon the presence of elevated methane in the water supplies, the presence of combustible gas in water well headspaces, the close proximity of these three Affected Water Supplies to the Cabot Wells, the close proximity of these three Affected Water Supplies to the other 10 Affected Water Supplies, and other factors, the Department has determined that Cabot is also responsible for the pollution to these three Affected Water Supplies. A chart identifying the distances of all of the Affected Water Supplies from the Cabot Wells is attached as Exhibit D and incorporated herein.

Discharge of Natural Gas into the Groundwater

L. Based upon its investigation since January 2009, the Department has determined the following:

1. Cabot had caused or allowed the unpermitted discharge of natural gas, a polluting substance, into the groundwater, which constitutes a "water of the Commonwealth," as that term is defined in 35 P.S. §691.1.

2. As of the date of this Consent Order and Agreement, Cabot has taken certain actions approved by the Department to prevent the ongoing, unpermitted discharge of natural gas into the waters of the Commonwealth.

Gas Migration Violations

M. Cabot's failure to properly case and cement the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well to prevent the migration of gas or other fluids into sources of fresh groundwater is a violation of 25 Pa. Code §78.81(a).

N. Cabot's failure to correct the insufficient or improperly cemented casing at the Gesford 3 Well, Gesford 9 Well, and Teel 5 Well is a violation of 25 Pa. Code §78.86.

O. Cabot's pollution of the Affected Water Supplies and failure to restore or replace the Affected Water Supplies to the quality at least equal of the water supply prior to becoming affected is a violation of Section 208(a) of the Oil and Gas Act, 58 P.S. §601.208(a), and 25 Pa. Code §78.51(d).

P. Cabot's unpermitted discharge of natural gas to the groundwater is a violation of Section 401 of the Clean Streams Law, §35 P.S. 691.401, and 25 Pa. Code §78.73(a).

Q. The violations set forth in the Paragraphs M through P, above, constitute unlawful conduct pursuant to Section 509 of the Oil and Gas Act, 58 P.S. §601.509, and Section 611 of the Clean Streams Law, 35 P.S. §691.611.

BACKGROUND ON OTHER VIOLATIONS

R. Cabot is the "owner" and "operator," as those terms are defined in Section 103 of the Oil and Gas Act, 58 P.S. §601.103, of the wells listed in Exhibit E, which is attached and incorporated herein.

Black 2H Well Site

S. On September 19, 2008, a representative of Cabot reported to the Department that he had observed drilling mud discharging to a spring seep located down-slope of the Black 2H Well site. At that time, he indicated that the drilling mud appeared to have migrated from an unlined trench that had been excavated at the Black 2H Well site to accommodate the drill mud circulating system.

T. Between September 19, 2008, and September 24, 2008, Cabot lined the trench described in Paragraph S, above, and constructed a series of controls below the spring seep to capture and contain the drilling mud discharge.

U. On September 24, 2008, the Department inspected the Black 2H Well site and documented that the drilling mud was not being contained by the liner which had been placed in the trench described in Paragraph T, above, that drilling mud was discharging to the ground under the liner, and that drilling mud continued to discharge from the spring seep.

V. The drilling mud described in Paragraph S, above, is an "industrial waste" as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1, and a "residual waste" as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

W. The spring seep described in Paragraph S, above, is a "water of the Commonwealth" as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1.

X. Cabot did not have a permit or authorization from the Department to discharge industrial waste and/or residual waste onto the ground or into waters of the Commonwealth from the Black 2H Well site.

Y. Cabot's discharge of industrial waste and/or residual waste onto the ground and into waters of the Commonwealth from the Black 2H Well site without first obtaining a permit or

approval from the Department is contrary to the requirements of 25 Pa. Code §§78.54 and 78.56(a), and is a violation of Sections 307 and 401 of the Clean Streams Law, 35 P.S. §§691.307 and 691.401, and Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

Gesford 3 Well Site

Z. On January 30, 2009, a representative of Cabot reported to the Department that approximately 100 gallons of diesel fuel spill had spilled at the Gesford 3 Well site.

AA. On February 2, 2009, the Department inspected the Gesford 3 Well site and documented that the spill occurred when a leak developed in a fuel line for a drilling mud pump at the site.

AB. Spilled diesel fuel is a "residual waste" as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

AC. Cabot's spill of diesel fuel onto the ground at the Gesford 3 Well site without first obtaining a permit or approval from the Department is a violation of Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

B Severcool 1 Well Site

AD. On February 18, 2009, the Department inspected the B Severcool 1Well site and documented that drilling mud had discharged onto the ground at the site when the on-site drilling mud pump developed a leak. At that time, the Department estimated that 25 to 50 barrels of drilling mud flowed to a diversion ditch around the site, and approximately 5 to 10 barrels of drilling mud flowed from the diversion ditch into an adjacent field.

AE. The drilling mud described in Paragraph AD, above, is a "residual waste" as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

AF. Cabot's discharge of residual waste onto the ground at the B Servercool 1 Well site without first obtaining a permit or approval from the Department is contrary to the requirements of 25 Pa. Code §78.56(a), and is a violation of Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

Gesford 1 Well Site

AG. On March 6, 2009, a Cabot representative reported to the Department that Cabot had caused or allowed a discharge of drilling mud at the Gesford 1 Well site. Cabot subsequently informed the Department that the drilling mud had flowed off-site and into Burdick Creek, and that the discharge occurred when the drilling mud traveled up and outside of the conductor pipe for the Gesford 1 Well.

AH. On March 9, 2009, the Department inspected the Gesford 1 Well site and verified that the discharge reported by Cabot as described in Paragraph AG, above, had flowed across the ground and into Burdick Creek.

AI. The drilling mud described in Paragraph AG, above, is an "industrial waste" as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1, and a "residual waste" as defined in Section 103 of the Solid Waste Management Act, 35 P.S. §6018.103.

AJ. Burdick Creek is a "water of the Commonwealth" as defined in Section 1 of the Clean Streams Law, 35 P.S. §691.1.

AK. Cabot does not have a permit or authorization from the Department to discharge industrial waste and/or residual waste onto the ground or into waters of the Commonwealth from the Gesford 1 Well site.

AL. Cabot's discharge of industrial waste and/or residual waste onto the ground and into waters of the Commonwealth from the Gesford 1 Well site without first obtaining a permit or approval from the Department is contrary to the requirements of 25 Pa. Code §§78.54 and 78.56(a), and is a violation of Sections 307 and 401 of the Clean Streams Law, 35 P.S. §§691.307 and 691.401, and Section 301 of the Solid Waste Management Act, 35 P.S. §6018.301. As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

AM. The violations described in Paragraphs Y, AC, AF, and AL, above, constitute unlawful conduct under Section 611 of the Clean Streams Law, 35 P.S. §691.611, Section 509 of the Oil and Gas Act, 58 P.S. §601.509, and/or Section 302 of the Solid Waste Management Act, 35 P.S. §6018.302, and subject Cabot to a claim for civil penalties under Section 605 of the Clean Streams Law, 35 P.S. §691.605, Section 506 of the Oil and Gas Act, 58 P.S. §601.506, and/or Section 605 of the Solid Waste Management Act, 35 P.S. §6018.605.

Failure to Submit Well Records

AN. On February 18, 2009, a review of the Department's files documented that Cabot had failed to submit the required well records to the Department within 30 days of cessation of drilling for all of the Wells identified at Exhibit E, except for the B Servercool 1 Well and the Gesford 1 Well.

AO. Cabot's failure to submit well records as specified in Paragraph AN, above, is a violation of Section 212(b) of the Oil and Gas Act, 58 P.S. §601.212(b). As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

Failure to Maintain Driller's Log at Well Site

AP. On March 5, 12, and 18, 2009, the Department inspected the Gesford 1 Well site and documented that Cabot had failed to keep a detailed drillers log at the Well site available for inspection until drilling is completed.

AQ. Cabot's failure to keep a detailed drillers log at the well site available for inspection until drilling is completed is a violation of 25 Pa. Code §78.122(a). As of the date of this Consent Order and Agreement, Cabot has corrected this violation.

AR. The violations described in Paragraphs AO and AQ, above, constitute unlawful conduct under Section 509 of the Oil and Gas Act, 58 P.S. §601.509, and subject Cabot to a claim for civil penalties under Section 506 of the Oil and Gas Act, 58 P.S. §601.506.

Order

After full and complete negotiation of all matters set forth in this Consent Order and Agreement, and upon mutual exchange of the covenants contained herein, the Parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by Cabot as follows:

1. ***Authority.*** This Consent Order and Agreement is an Order of the Department authorized and issued pursuant to Section 5 of the Clean Streams Law, 35 P.S. §691.5; Section 503 of the Oil and Gas Act, 58 P.S. §601.503; Section 602 of the Solid Waste Management Act, 35 P.S. §6018.602; and Section 1917-A of the Administrative Code.

2. ***Findings.***

a. Cabot agrees that the Findings in Paragraphs A-L, R-U, W-X, Z-AA, AD, AG-AH, AJ-AK, AN, and AP, above, are true and correct and, in any matter or proceeding involving Cabot and the Department, Cabot shall not challenge the accuracy or validity of these Findings.

b. The Parties do not authorize any other persons to use the Findings in this Consent Order and Agreement in any matter or proceeding.

3. ***Compliance with Environmental Laws And Regulations.*** Cabot shall take all actions necessary, including the corrective actions set forth in this Consent Order and Agreement, to maintain compliance with all applicable environmental laws and regulations, including all applicable provisions of the Clean Streams Law, Oil and Gas Act, Solid Waste Management Act, and the Regulations.

4. ***Corrective Actions.***

a. Cabot shall not begin hydrofracturing of Cabot Wells in the Affected Area until it has received written authorization from the Department. ???

b. Cabot shall not complete the drilling of any existing Cabot Well within the Affected Area and shall not begin the drilling of any new Well within the Affected Area except in accordance with the requirements of this Consent Order and Agreement.

c. As of the date of this Consent Order and Agreement, Cabot has submitted and the Department has approved both the cement bond logs for the surface water protection casing and the casing and cementing plan for the Ely 7H Well, Gesford 5H Well, and the Gesford 8H Well.

d. Upon execution of this Consent Order and Agreement, Cabot may resume further drilling of the Ely 7H Well, Gesford 5H Well, and/or the Gesford 8H Well.

e. Regarding any new Well within the Affected Area, Cabot shall submit to the Department the casing and cementing plan for a new Well at least 10 business days before it proposes to begin drilling the new Well within the Affected Area.

f. Cabot may begin drilling a new Well within the Affected Area only upon the Department's written notice that it has approved the casing and cementing plan for the new Well.

g. Cabot shall complete the drilling of the Ely 7H Well, Gesford 5H Well, and Gesford 8H Well, and shall complete the drilling of any new Well within the Affected Area in compliance with the requirements of this Consent Order and Agreement, including the requirements of Paragraphs 3, above, and any documents approved by the Department under this Consent Order and Agreement.

h. Within 10 days of the date of this Consent Order and Agreement, Cabot shall notify the Department, in writing, of the names and addresses of all other persons in the Affected Area not listed at Exhibit C that Cabot is providing and maintaining temporary potable water and/or gas mitigation devices for, and/or has received complaints from alleging that their water supply quantity or quality has been affected by Cabot's drilling activities. For any persons that reside within the Affected Area and are not listed at Exhibit C, Cabot shall continue to provide and maintain temporary potable water and/or gas mitigation devices for such persons in accordance with 25 Pa. Code §78.51, or as otherwise approved by the Department.

i. Within 15 days of the date of this Consent Order and Agreement, Cabot shall submit a plan to the Department that identifies, in detail, how Cabot shall test for and ensure the integrity of the casing and cement on the Cabot Wells identified in Paragraphs I.1., I.2. and I.3., above. The plan shall include an implementation schedule and, at a minimum, the following:

1) a date by when Cabot proposes to start the integrity testing;

2) a schedule for submitting to the Department a report within 60 days of the date of this Consent Order and Agreement that describes the tests completed, test results, and any corrective actions needed; and

3) a final compliance date no later than March 31, 2010, unless otherwise approved by the Department in writing, by when Cabot shall complete all of the actions specified in the plan to correct the deficiencies to the casing and cement in the identified Wells, or plug the Wells in accordance with Paragraph 4.j., below.

j. Unless otherwise agreed to by the Department in writing, if Cabot fails to correct, in accordance with 25 Pa. Code §78.86, the improper and/or insufficient cemented casings in the Cabot Well(s) identified by the Department in Paragraphs I.1., I.2, and I.3., above, Cabot shall plug such Cabot Well(s) by March 31, 2010, in accordance with Section 210(a) of the Oil and Gas Act, 58 P.S. §601.210(a), and 25 Pa. Code §§78.91-78.98.

k. As of the date of this Consent Order and Agreement, Cabot has either provided whole house potable water and/or gas mitigation devices to the Affected Water Supplies, or has identified an alternative to such that has been approved in writing by the Department. If Cabot provides water by purchasing from a water purveyor, Cabot shall assure that the users of the Affected Water Supplies will receive water in amounts sufficient to continually satisfy water usage needs until the Department notifies Cabot, in writing, that the Department has determined that the Affected Water Supply has been restored such that Cabot is no longer required to provide such purchased water.

l. By March 31, 2010, Cabot shall have completed any and all actions to prevent the unpermitted discharge of natural gas (if any) from the Cabot Wells or any other well owned and/or operated by Cabot within the Affected Area and into the waters of the Commonwealth.

m. By March 31, 2010, Cabot shall submit to the Department a plan and an implementation schedule, to permanently restore or replace, in accordance with Section 208 of the Oil and Gas Act, 58 P.S. §601.208, and 25 Pa. Code §78.51, the Affected Water Supplies, and the other water supplies identified by Cabot pursuant to Paragraph 4.h., above, that the Department determines have been affected by Cabot's drilling activities. Upon approval by the Department, Cabot shall implement the plan in accordance with the approved implementation schedule.

5. ***Submission of Documents.*** With regard to any document that Cabot is required to submit pursuant to this Consent Order and Agreement, the Department will review Cabot's document and will approve or disapprove the document, or portion thereof, in writing. If the document, or any portion of the document, is disapproved by the Department, Cabot shall submit a revised document to the Department that addresses the Department's concerns within a reasonable time, as specified by the Department. The Department will approve or disapprove the revised document in writing. Upon approval by the Department, the document, and the Department-approved schedule therein, shall become a part of this Consent Order and Agreement for all purposes and shall be enforceable as such.

6. ***Civil Penalty Settlement.*** Upon signing this Consent Order and Agreement, Cabot shall pay a civil penalty of $120,000. This payment is in settlement for the violations set forth in the Findings, above, covering the dates set forth herein. The payment shall be made by corporate check or the like made payable to "Commonwealth of Pennsylvania" and sent to the Department at the address set forth in Paragraph 11, below.

7. ***Stipulated Civil Penalties.***

a. If Cabot fails to comply with the provisions of this Consent Order and Agreement, Cabot shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty as follows:

1) If Cabot drills a new well within the Affected Area before complying with all of the obligations set forth in Paragraphs 4.e.-4.f., above, Cabot shall pay a stipulated penalty of $15,000 per each well where such drilling has commenced.

2) If Cabot fails to meet the obligations set forth in Paragraphs 4.g.-4.m., above, Cabot shall pay a stipulated penalty of $1,000 per day for each violation.

b. Stipulated civil penalty payments shall be payable monthly on or before the 15th day of each succeeding month, and shall be made by corporate check or the like made payable to "Commonwealth of Pennsylvania" and sent to the Department at the address set forth in Paragraph 11, below.

c. Any payment under this Paragraph shall neither waive Cabot's duty to meet its obligations under this Consent Order and Agreement nor preclude the Department from commencing an action to compel Cabot's compliance with the terms and conditions of this Consent Order and agreement. The payment resolves only Cabot's liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

8. ***Reservation of Rights.*** The Department reserves the right to require additional measures to achieve compliance with applicable law. Cabot reserves the right to challenge any action which the Department may take to require those measures.

9. ***Liability of Cabot.*** Cabot shall be liable for any violations of the Consent Order and Agreement, including those caused by, contributed to, or allowed by its officers, directors, agents, employees, contractors, successors, and assigns.

10. ***Transfer of the Cabot Wells and/or Leases.***

a. Cabot's duties and obligations under this Consent Order and Agreement shall not be modified, diminished, terminated, or otherwise altered by the transfer of the Cabot Wells, leases, any other wells owned and/or operated by Cabot within the Affected Area, and/or any parts thereof, except as hereinafter provided.

b. If before the termination of this Consent Order and Agreement, Cabot intends to transfer the Cabot Wells, leases, any other wells owned and/or operated by Cabot within the Affected Area, and/or any parts thereof, Cabot shall provide a copy of this Consent Order and

Agreement to the prospective transferee at least 30 days prior to the contemplated transfer and shall simultaneously inform the Department of such intent pursuant to Paragraph 11 (Correspondence with Department), below.

c. The Department, in its sole discretion, may agree to modify or terminate Cabot's duties and obligations under this Consent Order and Agreement and may agree to a transfer upon determination that Cabot is in full compliance with this Consent Order and Agreement, including payment of any stipulated penalties owed, and upon the transferee entering into a Consent Order and Agreement with the Department concerning the Wells and/or leases at issue. Cabot agrees to waive any right that it may have to challenge the Department's decision in this regard.

11. ***Correspondence with Department.*** All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

Oil and Gas Management
Department of Environmental Protection
230 Chestnut Street
Meadville, PA 16335-3481
Telephone: (814) 332-6860
Fax: (814) 332-6121

12. ***Correspondence with Cabot.*** All correspondence with Cabot concerning this Consent Order and Agreement shall be addressed to:

Mr. Jason Clark and
Mr. Phil Stalnaker
Cabot Oil and Gas Corporation
5 Penn Center West, Suite 401
Pittsburgh, PA 15276
Telephone: (412) 249-3850
Fax: (412) 249-3855

Cabot shall notify the Department whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent Order and

Agreement, including its enforcement, may be made by mailing a copy by certified mail, return receipt requested, to the above address.

13. ***Decisions Under Consent Order and Agreement.*** Except as provided in Paragraph 10.c, above, any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that stipulated civil penalties are due, is intended to be neither a final action under 25 Pa. Code §1021.2, nor an adjudication under 2 Pa.C.S.A. §101. Any objection, which Cabot may have to the decision will be preserved until the Department enforces this Consent Order and Agreement.

14. ***Severability.*** The Paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the Parties.

15. ***Entire Agreement.*** This Consent Order and Agreement shall constitute the entire integrated agreement of the Parties as to the subject matter hereof. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or intent of any provisions herein in any litigation or any other proceeding.

16. ***Attorney Fees.*** The Parties shall bear their respective attorney fees, expenses, and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

17. ***Modifications.*** No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the Parties.

18. ***Titles.*** A title used at the beginning of any Paragraph of this Consent Order and Agreement may be used to aid in the construction of that Paragraph, but shall not be treated as controlling.

19. ***Termination of Consent Order and Agreement.*** Cabot's obligations, but not the Findings, of this Consent Order and Agreement shall terminate when Cabot has: completed all of the requirements of this Consent Order and Agreement, and paid any outstanding stipulated penalties due under Paragraph 7, above; or by September 30, 2010, whichever is sooner.

IN WITNESS WHEREOF, the Parties have caused this Consent Order and Agreement to be executed by their duly authorized representative. The undersigned representative of Cabot certifies under penalty of law, as provided by 18 Pa.C.S.A. §4904, that he/she is authorized to execute this Consent Order and Agreement on behalf of Cabot, that Cabot consents to the entry of this Consent Order and Agreement as a final ORDER of the Department; and that Cabot hereby knowingly waives its right to appeal this Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, the Act of July 13, 1988, P.L. 530, No. 1988-94, 35 P.S. §7514; the Administrative Agency Law, 2 Pa.C.S.A. §103(a) and Chapters 5A and 7A; or any other provision of law. Signature by Cabot's attorney certifies only that the Consent Order and Agreement has been signed after consulting with counsel.

FOR CABOT OIL AND GAS CORPORATION:

Phillip Stalnaker
Vice President/Regional Manager

Kenneth S. Komoroski, Esq.
Attorney for Cabot

FOR THE COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION:

Stacy Gustafson for S. Craig Lobins
S. Craig Lobins
Regional Manager
Oil and Gas Management Program
Northwest Region

Donna L. Duffy
Regional Counsel

EXHIBIT A

CABOT WELLS WITHIN AFFECTED AREA

WELL NAME	PERMIT NO.
TEEL 1	115-20007
TEEL 2	115-20010
TEEL 6	115-20011
TEEL 7	115-20023
BROOKS 1	115-20014
TEEL 5	115-20024
ELY 1	115-20029
ELY 2	115-20015
ELY 4	115-20016
HUBBARD 1	115-20039
HUBBARD 2	115-20017
KAHLE 1	115-20018
RATZEL 1	115-20025
GESFORD 1	115-20040
GESFORD 2	115-20033
GESFORD 3	115-20019
HEITSMAN 1	115-20020
HEITSMAN 2	115-20021
BAKER 1	115-20026
BLACK 1	115-20028
LEWIS 2	115-20030
ELY 4H	115-20034
LEWIS 1	115-20035
COSTELLO 1	115-20036
ELY 6H	115-20041
COSTELLO 2	115-20043
BLACK 1H	115-20048
ELY 1H	115-20049
HEITSMAN 1H	115-20050
RATZEL 1H	115-20047
BROOKS 1H	115-20051
ELY 5H	115-20054
BLACK 2H	115-20056
ROZANSKI 1	115-20057
GREENWOOD 2H	115-20085
GESFORD 4R	115-20091
J GRIMSLEY 1	115-20095
ELY 7V	115-20096
RATZEL 2H	115-20152
R HULL 1H	115-20122
R HULL 2H	115-20121
GREENWOOD 3V	115-20142
HUBBARD 3	115-20131
RATZEL 3V	115-20117
HEITSMAN 3V	115-20123
HEITSMAN 2	115-20140
HUBBARD 5H	115-20148
HUBBARD 6H	115-20147
A & M HIBBARD 2H	115-20149
HEITSMAN 4H NW	115-20162
GESFORD 7H NW	115-20163
BROOKS 3V	115-20161
TEEL 12H NW	115-20167
BLACK 3V	115-20133
J GRIMSLEY 2H SE	115-20171
R HULL 3V	115-20173
ELY 7H SE	115-20160
GESFORD 8H NW	115-20183
GESFORD 9	115-20187
P KELLEY 1	115-20196
GESFORD 5H NW	115-20201
A & M HIBBARD 4	115-20222
BAKER 3	115-20226


HUBBARD 3 OG WELL
HUBBARD 1 OG WELL
HUBBARD 5H OG WELL
BAKER 1 OG WELL
BAKER 3 OG WELL
GESFORD 9H NW OG WELL
GESFORD 1 OG WELL
GESFORD 2 OG WELL
GESFORD 7H NW OG WELL
GESFORD 8 OG WELL
GESFORD 4R OG WELL
HEITSMAN 1H OG WELL
HEITSMAN 2 OG WELL
COSTELLO 2 OG WELL
COSTELLO 1 OG WELL
ELK 2 OG WELL
TEXAS 1 OG WELL
TEEL 1 OG WELL
TEEL 2 OG WELL
TEEL 3 OG WELL
TEEL 4 OG WELL
BROOKS 3V OG WELL
Dallenbach Pond

565 F.3d 683, 68 ERC 2031
(Cite as: 565 F.3d 683)

H

United States Court of Appeals,
Tenth Circuit.

State of NEW MEXICO ex rel. Bill RICHARDSON, Governor, Gary King, Attorney General,[FN*] New Mexico Energy, Minerals and Natural Resources Department, New Mexico Department of Game and Fish, New Mexico Environment Department, and Katherine Slick, New Mexico State Historic Preservation Officer; New Mexico Wilderness Alliance; Wilderness Society; Sierra Club; Natural Resources Defense Council; National Wildlife Federation; Southwest Environmental Center; Forest Guardians; New Mexico Wildlife Federation, Plaintiffs-Appellees-Cross-Appellants,

FN* Pursuant to Fed. R.App. P. 43(c)(2), Gary King is substituted for Patricia A. Madrid.

v.

BUREAU OF LAND MANAGEMENT; Mike Pool, Director, Bureau of Land Management; Linda Rundell, New Mexico State Director, Bureau of Land Management; Benjamin N. Tuggle, in his Official Capacity as the Regional Director, Region 2, U.S. Fish and Wildlife Service; Rowan W. Gould, in his official capacity as the Director of the U.S. Fish and Wildlife Service; United States Fish and Wildlife Service; Ken Salazar, in his official capacity as Secretary of the Interior; United States Department of the Interior,[FN**] Defendants-Cross-Appellees,

FN** Pursuant to Fed. R.App. P. 43(c)(2), Mike Pool is substituted for Kathleen Clarke, Benjamin N. Tuggle is substituted for H. Dale Hall, Rowan W. Gould is substituted for Steven A. Williams, and Ken Salazar is substituted for Gale Norton.

and

Independent Petroleum Association of New Mexico, Intervenor-Defendant-Appellant-Cross-Appellee.

Nos. 06-2352, 06-2353, 06-2354.

April 28, 2009.

Background: State of New Mexico and a coalition of environmental organizations brought actions challenging the procedures by which Bureau of Land Management (BLM) adopted a Resource Management Plan Amendment (RMPA) opening publicly-owned desert grassland to oil and gas development. After consolidation, the United States District Court for the District of New Mexico, Bruce D. Black, J., 459 F.Supp.2d 1102, rejected most challenges, and parties cross-appealed.

Holdings: The Court of Appeals, Lucero, Circuit Judge, held that:
(1) Fish and Wildlife Service's (FWS) decision to reintroduce Aplomado Falcon into RMPA, which led to the falcon's loss of "endangered" status, rendered environmental group's Endangered Species Act (ESA) challenge moot;
(2) BLM failed to thoroughly analyze the environmental impacts of modified RMPA alternative;
(3) BLM was required to include in its EIS an analysis of an alternative closing the desert grasslands to development; and
(4) National Environmental Policy Act (NEPA) required an analysis of the site-specific impacts of oil and gas lease prior to its issuance.

Affirmed in part, reversed in part, and vacated in part.

West Headnotes

[1] Environmental Law 149E 587

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek584 Necessity for Preparation of Statement, Consideration of Factors, or Other Compliance with Requirements
149Ek587 k. Major Government Action. Most Cited Cases
Amending a resource management plan is a "major federal action" whose potential environmental impacts must be assessed under National Environmental Policy Act (NEPA). National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C).

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(Cite as: 565 F.3d 683)

[2] Environmental Law 149E 652

149E Environmental Law
149EXIII Judicial Review or Intervention
149Ek649 Persons Entitled to Sue or Seek Review; Standing
149Ek652 k. Organizations, Associations, and Other Groups. Most Cited Cases
An environmental organization has standing if its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization's purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit. U.S.C.A. Const. Art. 3, § 2, cl. 1.

[3] Public Lands 317 109

317 Public Lands
317II Survey and Disposal of Lands of United States
317II(I) Proceedings in Land Office
317k109 k. Actions and Proceedings to Set Aside Decisions. Most Cited Cases
New Mexico, which alleged harm to its lands as well as a financial burden through the costs of lost resources such as water from an aquifer, had standing to challenge the procedures by which Bureau of Land Management (BLM) opened publicly-owned desert grassland to development. U.S.C.A. Const. Art. 3, § 2, cl. 1.

[4] Administrative Law and Procedure 15A 681.1

15A Administrative Law and Procedure
15AV Judicial Review of Administrative Decisions
15AV(A) In General
15Ak681 Further Review
15Ak681.1 k. In General. Most Cited Cases
Remand by a district court to an administrative agency for further proceedings is ordinarily not appealable because it is not a final decision. 28 U.S.C.A. § 1291.

[5] Environmental Law 149E 661

149E Environmental Law
149EXIII Judicial Review or Intervention
149Ek661 k. Finality. Most Cited Cases
District court's order, which determined that Bureau of Land Management (BLM) failed to conduct sufficient site-specific environmental analysis before auctioning leases for lands within the plan area and instructed the agency to conduct further assessment if it wished to execute a particular lease, was not an unreviewable administrative remand, but rather, a final order which was final and reviewable; BLM appeared in the district court as a traditional adversarial party, defending its own actions against challenges by the state and environmental organizations, rather than defending a ruling made by the agency in a controversy between parties appearing before it. 28 U.S.C.A. § 1291; National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

[6] Environmental Law 149E 663

149E Environmental Law
149EXIII Judicial Review or Intervention
149Ek663 k. Mootness. Most Cited Cases
Fish and Wildlife Service's (FWS) decision to reintroduce Aplomado Falcon into Bureau of Land Management (BLM) Resource Management Plan area, which led to the falcon's loss of "endangered" status, rendered moot an environmental group's Endangered Species Act (ESA) challenge based on BLM's failure to consult with FWS; falcon's reclassification, and the resulting inapplicability of the formal consultation requirement did not amount to a voluntary cessation to evade judicial review, and the allegedly wrongful behavior could not reasonably be expected to recur so as to trigger exception to mootness doctrine. U.S.C.A. Const. Art. 3, § 2, cl. 1; Endangered Species Act of 1973, § 7(a)(2), 16 U.S.C.A. § 1536(a)(2); 50 C.F.R. § 402.01.

[7] Federal Courts 170B 12.1

170B Federal Courts
170BI Jurisdiction and Powers in General
170BI(A) In General
170Bk12 Case or Controversy Requirement
170Bk12.1 k. In General. Most Cited Cases
In order for the federal courts to exercise jurisdiction, Article III of the Constitution requires that the controversy between the parties remain live throughout all stages of litigation. U.S.C.A. Const. Art. 3, § 2, cl.

1.

[8] Federal Courts 170B 12.1

170B Federal Courts
170BI Jurisdiction and Powers in General
170BI(A) In General
170Bk12 Case or Controversy Requirement
170Bk12.1 k. In General. Most Cited Cases
For a case to become "moot," it must be absolutely clear that the allegedly wrongful behavior could not reasonably be expected to recur. U.S.C.A. Const. Art. 3, § 2, cl. 1.

[9] Federal Courts 170B 932.1

170B Federal Courts
170BVIII Courts of Appeals
170BVIII(L) Determination and Disposition of Cause
170Bk932 Reversal or Vacation of Judgment in General
170Bk932.1 k. In General. Most Cited Cases
Vacatur is in order when mootness occurs through happenstance-circumstances not attributable to the parties-or the unilateral action of the party who prevailed in the lower court.

[10] Environmental Law 149E 582

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek580 Preliminary Assessment or Report
149Ek582 k. Necessity. Most Cited Cases
Under National Environmental Policy Act (NEPA), if an agency prefers, it may issue an environmental impact statement (EIS) without initially completing an environmental assessment (EA). National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C).

[11] Environmental Law 149E 577

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek577 k. Duty of Government Bodies to Consider Environment in General. Most Cited Cases
Even if scrupulously followed, National Environmental Policy Act (NEPA) merely prohibits uninformed, rather than unwise, agency action. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

[12] Environmental Law 149E 689

149E Environmental Law
149EXIII Judicial Review or Intervention
149Ek677 Scope of Inquiry on Review of Administrative Decision
149Ek689 k. Assessments and Impact Statements. Most Cited Cases
Deficiencies in an environmental impact statement (EIS) that are mere "flyspecks" and do not defeat National Environmental Policy Act's (NEPA) goals of informed decisionmaking and informed public comment will not lead to reversal. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C).

[13] Environmental Law 149E 597

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek597 k. Updated or Supplemental Statements; Recirculation. Most Cited Cases
Under National Environmental Policy Act (NEPA), an agency must prepare a supplemental assessment if the agency makes substantial changes in the proposed action that are relevant to environmental concerns; when the relevant environmental impacts have already been considered earlier in the NEPA process, no supplement is required. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.9(c)(1)(i).

[14] Environmental Law 149E 597

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek597 k. Updated or Supplemental Statements; Recirculation. Most Cited Cases
Change in Bureau of Land Management's (BLM) modified Resource Management Plan Amendment (RMPA) alternative, which placed different restrictions on surface disturbances, was not qualitatively within the spectrum of alternatives discussed in the draft environmental impact statement (EIS) and therefore BLM was required to issue a supplement

analyzing the impacts of that alternative; because location, not merely total surface disturbance, affected habitat fragmentation, modified alternative was qualitatively different and well outside the spectrum of anything BLM considered in the draft EIS. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.9(c)(1)(i).

[15] Environmental Law 149E 690

149E Environmental Law
149EXIII Judicial Review or Intervention
149Ek690 k. Harmless Error. Most Cited Cases
Bureau of Land Management's (BLM's) failure to thoroughly analyze the environmental impacts of modified Resource Management Plan Amendment (RMPA) alternative in a public National Environmental Policy Act (NEPA) document was not harmless since selection of modified alternative, which placed different restrictions on surface disturbances, was not a minor change or oversight. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.9(c)(1)(i); 5 U.S.C.A. § 706.

[16] Environmental Law 149E 601

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek601 k. Consideration of Alternatives. Most Cited Cases
While National Environmental Policy Act (NEPA) does not require agencies to analyze the environmental consequences of alternatives it has in good faith rejected as too remote, speculative, or impractical or ineffective, it does require the development of information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned; therefore, an agency need not consider an alternative unless it is significantly distinguishable from the alternatives already considered. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.14.

[17] Environmental Law 149E 601

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek601 k. Consideration of Alternatives. Most Cited Cases
In context of determining whether, under National Environmental Policy Act (NEPA), an environmental impact statement (EIS) analyzed sufficient alternatives to allow agency to take a hard look at the available options, while agency may restrict its analysis to alternatives that suit the basic policy objectives of a planning action, it may do so only as long as the statements of purpose and need drafted to guide the environmental review process are not unreasonably narrow. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C).

[18] Environmental Law 149E 601

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek601 k. Consideration of Alternatives. Most Cited Cases
Under National Environmental Policy Act (NEPA), reasonableness of the alternatives considered in an environmental impact statement (EIS) is measured against two guideposts: first, when considering agency actions taken pursuant to a statute, an alternative is reasonable only if it falls within the agency's statutory mandate, and second, reasonableness is judged with reference to an agency's objectives for a particular project. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.14.

[19] Environmental Law 149E 604(5)

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek604 Particular Projects
149Ek604(5) k. Mining; Oil and Gas. Most Cited Cases
Under National Environmental Policy Act (NEPA), Bureau of Land Management (BLM) was required to include in its environmental impact statement (EIS) an analysis of an alternative closing the desert grass-

lands to development since such an alternative fell within Federal Land Management Policy Act's (FLPMA) multiple use mandate and was fully consistent with the objectives of Resource Management Plan Amendment (RMPA) opening publicly-owned desert grassland to oil and gas development. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); Federal Land Policy and Management Act of 1976, § 202(c)(1), 43 U.S.C.A. § 1712(c)(1); 40 C.F.R. § 1502.14.

[20] Environmental Law 149E 604(5)

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek604 Particular Projects
149Ek604(5) k. Mining; Oil and Gas. Most Cited Cases
Because Bureau of Land Management's (BLM) Resource Management Plan Amendment (RMPA) opening publicly-owned desert grassland to oil and gas development did not govern all surface uses but only the development of subsurface fluid mineral resources, it was permissible for BLM to determine that a management option governing all surface uses was outside the scope of the plan's objectives; therefore, designation of wilderness study areas was reasonably excluded from BLM's environmental impact statement (EIS) analysis under National Environmental Policy Act (NEPA). National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); Federal Land Policy and Management Act of 1976, § 202(c)(1), 43 U.S.C.A. § 1712(c)(1); 40 C.F.R. § 1502.14.

[21] Environmental Law 149E 604(5)

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek604 Particular Projects
149Ek604(5) k. Mining; Oil and Gas. Most Cited Cases
In adopting a Resource Management Plan Amendment (RMPA) opening publicly-owned desert grassland to oil and gas development, Bureau of Land Management (BLM) acted arbitrarily under National Environmental Policy Act (NEPA) by concluding without apparent evidentiary support that impacts on aquifer would be minimal, and thus excluding from full analysis in an environmental impact statement (EIS). National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1508.13.

[22] Environmental Law 149E 600

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek598 Adequacy of Statement, Consideration, or Compliance
149Ek600 k. Consideration and Disclosure of Effects. Most Cited Cases
Under National Environmental Policy Act (NEPA), insignificant impacts may permissibly be excluded from full analysis in an environmental impact statement (EIS). National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1508.13.

[23] Environmental Law 149E 689

149E Environmental Law
149EXIII Judicial Review or Intervention
149Ek677 Scope of Inquiry on Review of Administrative Decision
149Ek689 k. Assessments and Impact Statements. Most Cited Cases
Court can overturn an agency's National Environmental Policy Act (NEPA) decisions on substantive grounds only if the appellants can demonstrate substantively that the agency's conclusion represents a clear error of judgment. National Environmental Policy Act of 1969, § 2 et seq., 42 U.S.C.A. § 4321 et seq.

[24] Environmental Law 149E 610

149E Environmental Law
149EXII Assessments and Impact Statements
149Ek610 k. Time Requirements. Most Cited Cases
National Environmental Policy Act (NEPA) required Bureau of Land Management (BLM) to produce an environmental impact statement (EIS) analyzing the site-specific impacts of oil and gas lease prior to lease's issuance; because BLM could not prevent the impacts resulting from surface use after a lease is-

sued, it was required to analyze any foreseeable impacts of such use before committing the resources, and the impacts of the planned gas field were reasonably foreseeable before lease was issued. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C.A. § 4332(2)(C); 40 C.F.R. § 1502.22.

[25] Public Lands 317 97

317 Public Lands
317II Survey and Disposal of Lands of United States
317II(I) Proceedings in Land Office
317k97 k. Mode and Rules of Procedure in General. Most Cited Cases
Because Bureau of Land Management (BLM) circulated a supplemental environmental impact statement (SEIS) that discussed the Governor's consistency review, published a notice in the Federal Register of the SEIS comment period mentioning the Governor's review, and both BLM and state posted the review on their websites, the public was apprised of the existence of the Governor's review and was afforded an "opportunity to comment" on his proposals as required by Federal Land Policy and Management Act (FLPMA) regulation. Federal Land Policy and Management Act of 1976, § 202(c)(9), 43 U.S.C.A. § 1712(c)(9); 43 C.F.R. § 1610.3-2(e).

***687** Ronald Walter Opsahl (William Perry Pendley with him on the briefs), Mountain States Legal Foundation, Lakewood, CO, for the Intervenor-Defendant-Appellant-Cross-Appellee.

***688** Alletta Belin, Belin & Sugarman, Santa Fe, New Mexico (Stephen F. Farris and Judith Ann Moore, Office of the Attorney General, State of New Mexico with them on the briefs) and James Angell (Andrea L. Zaccardi with him on the briefs), Earthjustice, Denver, CO, for Plaintiffs-Appellees-Cross-Appellants State of New Mexico, et al.

Elizabeth Peterson (Arthur Arguedas, Office of the Solicitor, U.S. Department of the Interior and Ronald J. Tenpas, Assistant Attorney General, Andrew A. Smith, Aaron P. Avila, and Andrew C. Mergen with her on the briefs), U.S. Department of Justice, Environment & Natural Resources Division, Washington, D.C., for Defendants-Cross-Appellees Bureau of Land Management, et al.

Before LUCERO, ANDERSON, and O'BRIEN, Circuit Judges.

LUCERO, Circuit Judge.

This litigation concerns the environmental fate of New Mexico's Otero Mesa, the largest publicly-owned expanse of undisturbed Chihuahuan Desert grassland in the United States. From 1998 to 2004, the Bureau of Land Management ("BLM" or "the Agency") conducted a large-scale land management planning process for federal fluid minerals development in Sierra and Otero Counties, where the Mesa is located. Ultimately, the Agency opened the majority of the Mesa to development, subject to a stipulation that only 5% of the surface of the Mesa could be in use at any one time. Invoking the National Environmental Policy Act ("NEPA"), the Federal Land Policy and Management Act ("FLPMA"), and the National Historic Preservation Act ("NHPA"), the State of New Mexico and a coalition of environmental organizations led by the New Mexico Wilderness Association ("NMWA") challenged in federal district court the procedures by which BLM reached this determination. NMWA also challenged BLM's decision not to consult with the Fish and Wildlife Service ("FWS") under the Endangered Species Act ("ESA") regarding possible impacts of the planned development on the Northern Aplomado Falcon.

The district court rejected these challenges, save for the plaintiffs' argument that BLM erred in beginning the leasing process on the Mesa before conducting additional analysis of site-specific environmental impacts flowing from the issuance of development leases. Discerning serious flaws in BLM's procedures, we affirm the district court's conclusion that NEPA requires BLM to conduct site-specific analysis before the leasing stage but reverse its determination that BLM's plan-level analysis complied with NEPA. Moreover, we affirm its conclusion that BLM complied with public comment provisions in FLPMA, and we vacate as moot the portion of the district court's order addressing NMWA's ESA claims.

I

Within Sierra and Otero counties in southern New Mexico lie the northern reaches of the richly biodiverse Chihuahuan Desert. Among the several habitats comprising this desert ecosystem is the Chihuahuan Desert grassland, much of which has depleted to

scrubland over the past century and a half. A New Mexico State University biology professor identifies this grassland as the most endangered ecosystem type in the United States. The Otero Mesa, which BLM seeks to open to oil and gas development upon conclusion of the planning process that is the subject of this litigation, is home to the endangered Northern Aplomado Falcon, along with a host of other threatened, endangered, and rare species. Only a few, unpaved roads traverse the Mesa. Lying beneath it is the ***689** Salt Basin Aquifer, which contains an estimated 15 million acre-feet of untapped potable water. Recognizing the importance of this valuable resource, the state of New Mexico and many citizens and environmental groups have sought to prevent development.

A

BLM manages some 1.8 million acres of surface land and 5 million acres of subsurface oil, gas, and geothermal resources in Sierra and Otero Counties. This includes the 427,275-acre Otero Mesa. Until recently, these resources were managed under the terms of a 1986 resource management plan (the "RMP"), *see* 43 C.F.R. § 1601.0-5(n), which contained no overall guidance on the management of fluid minerals development, leaving management decisions to be made on a case-by-case basis.[FN1] Because the area saw relatively little oil and gas exploration, BLM relied on the plan without incident for a decade and issued few development leases during this time.

> FN1. BLM's organic act, FLPMA, requires BLM to manage fluid resource development on federal lands using a three-step process. First, BLM develops an area-wide resource management plan, specifying what areas will be open to development and the conditions placed on such development. 43 U.S.C. § 1712(a). Second, BLM may grant leases for the development of specific sites within an area, subject to the requirements of the plan. § 1712(e); *see also* 43 C.F.R. § 1610.5-3. Finally, after exploring the leased lands, a lessee may file an application for permit to drill ("APD"), which requires BLM review and approval. 43 C.F.R. § 3162.3-1(c).

This state of affairs was upended in 1997, when a Harvey E. Yates Company ("HEYCO") exploratory well struck natural gas on the Otero Mesa. The strike occurred on a parcel designated the Bennett Ranch Unit ("BRU"). Oil and gas companies quickly responded by nominating over 250,000 acres in the area for federal leases. *See* § 3120-3.1. BLM determined that under the terms of then-existing internal policy, the increased development interest required the Agency to issue a management plan specifically governing fluid mineral resources. *See* BLM Handbook H-1624-1 (1990); BLM Manual §§ 1620.06(A), 1620.2 (1986). Accordingly, BLM asked existing leaseholders to voluntarily suspend their leases and began the process of amending the RMP to address possible oil, gas, and geothermal development.[FN2] *See* Notice of Intent to Prepare a Resource Management Plan Amendment and Environmental Impact Statement, 63 Fed.Reg. 55404 (Oct. 15, 1998). The stated goals of the amendment process were to determine which public lands in Sierra and Otero Counties should be available for leasing and development and to direct how leased lands would be managed. *Id.* at 55405.

> FN2. Not all existing leaseholders chose to suspend their leases. Since the amendment process began, HEYCO has submitted and BLM has approved six APDs. One of these permits has allowed HEYCO to commence drilling at the location of its initial gas strike.

[1] Amending a resource management plan is a "major federal action" whose potential environmental impacts must be assessed under NEPA. 42 U.S.C. § 4332(C); *see also Utah Shared Access Alliance v. Carpenter*, 463 F.3d 1125, 1131 (10th Cir.2006). Consequently, in October 2000, BLM issued a "Draft Resource Management Plan Amendment and Environmental Impact Statement for Federal Fluid Minerals Leasing and Development in Sierra and Otero Counties" (the "Draft EIS"). As NEPA requires, the Draft EIS analyzed several possible alternative management schemes for oil and gas development in the area. *See* 42 U.S.C. § 4332(C)(iii); 40 C.F.R. § 1502.14. Of the ***690** five alternatives identified, three were fully analyzed in the Draft EIS. The other two were eliminated without further analysis.

Both eliminated alternatives would have increased the level of environmental protection for the entire

plan area beyond the level provided under existing management or any of the fully analyzed alternatives. One would have done so through a blanket ban on minerals development leasing; the other, through a "no surface occupancy" ("NSO") stipulation allowing minerals development only by slant drilling from non-BLM lands. These alternatives were "considered initially but eliminated prior to further analysis" based on the conclusion that adopting a plan which so limited development would be arbitrary and capricious under FLPMA's multiple-use mandate.[FN3] *See* 43 U.S.C. § 1702(c). BLM also discounted one of the three alternatives analyzed in the Draft EIS: the "No-Action Alternative," or the option of taking no new planning action. After fully analyzing its likely impacts, BLM determined that the No-Action Alternative was not in compliance with its own policies.

> FN3. " 'Multiple use management' is a deceptively simple term that describes the enormously complicated task of striking a balance among the many competing uses to which land can be put, 'including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and [uses serving] natural scenic, scientific and historical values.' " *Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 58, 124 S.Ct. 2373, 159 L.Ed.2d 137 (2004) (quoting 43 U.S.C. § 1702(c)).

Thus, BLM was left with two possible management schemes, "Alternative A" and "Alternative B." Of the two, Alternative A placed fewer restrictions on development, and BLM selected it as the preferred alternative. *See* 40 C.F.R. § 1502.14(e). Alternative A opened 96.9% of the plan area but placed limitations on possible development, subjecting 58.9% of the area to a combination of NSO stipulations, controlled surface use stipulations, and timing stipulations. Of particular relevance to this litigation, Alternative A subjected 116,206 acres of the Otera Mesa and 16,256 acres of the adjoining Nutt Desert Grasslands to an NSO provision allowing surface disturbance only within 492 feet of existing roads. BLM crafted this NSO restriction "[t]o protect portions of the remaining desert grassland community by minimizing habitat fragmentation." [FN4]

> FN4. As explained in the Draft EIS:
>
> > Habitat fragmentation is the division of an extensive habitat into smaller habitat patches. Generally, the effects of habitat fragmentation include: (1) the reduction of the total amount of a habitat type and apportioning the remaining habitat into smaller, more isolated patches ..., (2) the creation of disturbed land which provides habitat for new, often exotic or weedy species ..., and (3) the increase in the amount of edge to remaining communities. This increases predation and modifies plant composition even within the undisturbed area....
> >
> > ....
> >
> > ... As the plant communities change, the wildlife composition of the area also shifts.... Loss may occur of area-sensitive species.

Also relevant to this litigation, the Draft EIS analyzed the potential impact on groundwater in the plan area only in general terms, without identifying or discussing specific aquifers such as the Salt Basin Aquifer. The Draft EIS concluded that in the construction phase of development:

> The possibility for degradation of fresh water aquifers could result if leaks or spills occur from pits used for the storage of drilling fluids, or if cathodic protection wells associated with pipelines are installed in a manner that allows for the commingling of shallow surface aquifers. However, since impacts would occur only if the governing regulations fail ***691** to protect the resource, the impact is not quantifiable.

As for the production phase, the Draft EIS was equally cursory. It stated that "[p]roduction of an oil and gas well typically would not have a direct impact on groundwater resources" because regulations require that "[a]ll oil and gas wells must have a casing and cement program ... to prevent the migration of oil, gas, or water ... that may result in degradation of groundwater." *Id.; see* 43 C.F.R. § 3162.5-2(d). Finally, the Draft EIS concluded that disposal wells, which are "used for the disposal of waste [by injection] into a subsurface stratum," 40 C.F.R. § 146.3, would not lead to significant impacts because appli-

cable casing and cement construction requirements and aquifer criteria would be followed and would prevent contamination. § 146.22 (listing construction requirements for Class II wells, including casing and cementing); *see generally* § 144 ("Underground Injection Control Program").

After releasing the Draft EIS, BLM accepted public comments for a 195-day period and held six public meetings to discuss it. *See* Notice of Availability and Public Hearings, 65 Fed.Reg. 69329 (Nov. 16, 2000); *see also* 40 C.F.R. § 1506.6(b) & (c) (requiring agencies to provide public notice of the availability of environmental documents and hold public meetings "whenever appropriate"). Nearly 300 oral and written comments were received, and BLM recognized that a majority of these addressed the need to protect the Otero Mesa grassland.[FN5] Numerous public comments expressed concern that the NSO stipulation, which exempted areas within 492 feet of existing roads, was insufficient to prevent fragmentation of the Otero Mesa grassland habitat. A Vice President of HEYCO commented that the resources underlying Otero Mesa would not likely be accessible via directional drilling, and thus, "Alternative A has the effect of closing 160,000+ acres to fluid mineral development." In response to all of these comments, BLM announced that it would reevaluate Alternative A in the Final EIS.

> FN5. In addition, BLM's Las Cruces Field Office received over 350 written comments regarding the Draft EIS and approximately 3,200 comments via email.

B

Among the species for which the Chihuahuan Desert grasslands provide habitat is the Northern Aplomado Falcon ("Aplomado Falcon" or "Falcon"), listed as an endangered species since 1986. *See* Determination of the Northern Aplomado Falcon to Be an Endangered Species, 51 Fed.Reg. 6686, 6686-88 (Feb. 25, 1986). Although Falcons have only "sporadically" been seen in the United States in recent decades, the presence of breeding Falcons just across the border in Mexico led biologists to believe that the Falcon might be poised to repopulate portions of the plan area. Repopulation by the Falcon would depend on the preservation of suitable grassland habitat.

In June 2003, during the ongoing resource management plan amendment process, BLM concluded that revisions to the management plan were "likely to adversely affect" the Falcon. Accordingly, it requested in writing that FWS begin formal consultation, pursuant to § 7 of the ESA, regarding whether BLM's proposed action might jeopardize the Falcon's continued existence. 16 U.S.C. § 1536; *see also* 50 C.F.R. § 402.14 (detailing formal consultation requirements). Three months later, the Agency reversed course, retracted its determination that the RMP revisions were "likely to adversely affect" the Falcon, and informed FWS of its conclusion ***692** that formal consultation was therefore unnecessary. FWS concurred in this revised determination, thus ending the formal consultation process and the agencies' study of likely effects on the Falcon.

C

Three years after issuing the Draft EIS, in December 2003, BLM issued a Proposed Resource Management Plan Amendment ("RMPA") and Final EIS. Rather than selecting from among the alternatives analyzed in the Draft EIS, however, the abstract of the Final EIS explained that BLM had selected "a modified version (as a result of public input) of preferred Alternative A described and analyzed in the Draft RMPA/EIS."

This "modified version" of Alternative A ("Alternative A-modified") differed in a crucial respect from Alternative A: Rather than limiting surface disturbances to areas within 492 feet of existing roadways, Alternative A-modified would instead limit disturbances to *any* 5% of the surface area of a leased parcel at a given time, regardless of location.[FN6] In addition to the 5% disturbance cap, Alternative A-modified required "unitization," a management scheme under which different operators cooperate in exploration and well development with the goal of minimizing surface impacts. "Unitization" was a new creation, never previously used by BLM in managing surface resources. [FN7] Although the sections of the Final EIS describing the management plan itself were modified to reflect these new requirements, the sections describing the plan's impacts on vegetation and wildlife were not substantially modified, because the EIS concluded that the changes "do not significantly alter ... the analysis of the environmental consequences." [FN8]

FN6. Alternative A-modified also removed controlled surface use and timing limitations on more than 600,000 acres of the plan area. This left 69% of the total plan area unrestricted-nearly twice the area Alternative A left unrestricted.

FN7. As the New Mexico Energy, Minerals and Natural Resources Department indicated in a protest letter filed with BLM after final adoption of Alternative A-modified, the 5% and unitization requirements left open considerable questions about their implementation and thus, likely impacts. For example, the Final EIS does not explain how the 5% cap will be calculated: as a total percentage of the Plan area, as a percentage of each leased parcel, or by some other method. Other protesters registered similar concerns.

FN8. The impacts analysis in the Final EIS does include some added portions, but these do not address differences in impacts created by adoption of the new 5% and unitization requirements-the salient change for purposes of this litigation.

Alternative A-modified did offer greater protection of the Otero and Nutt grasslands in one respect: It prohibited development on 35,790 acres of "core habitat" for five years pending further study and development of an adaptive management strategy. Thus, BLM presented the new alternative as responsive to the concerns of both industry and the environmental community. The Agency reiterated in response to public questions that it was unnecessary to analyze the impacts of A-modified because the overall "impact assessment," judged based on the "anticipated level of surface disturbance," "remained essentially the same" as under Alternative A. Based on this conclusion that the same or less surface acreage would be disturbed under Alternative A-modified, BLM reasoned, there was no substantial change from an environmental standpoint. Regarding groundwater concerns, the Final EIS added a discussion of the effects of leasing on specific basins, including the Salt Basin Aquifer, but again concluded that "the impacts on groundwater resources are expected to be minimal," adding***693** that "[t]ypically, natural gas wells make little water and the water produced can be disposed through the use of evaporation ponds."

D

In response to these changes, three New Mexico state agencies, a group of environmental organizations, and more than twenty-five members of the public filed formal protests with BLM. *See* 43 C.F.R. § 1610.5-2 ("Any person who participated in the planning process and has an interest which is or may be adversely affected by the ... amendment of a resource management plan may protest such ... amendment."). Of those protests reflected in the record, nearly all expressed concern regarding the changes to the Otero and Nutt grassland NSO stipulation. The New Mexico Energy, Mineral and Natural Resources Department, Earthjustice, and several citizens also objected to the level of assessment of likely impacts on groundwater. All protests were reviewed by BLM and ultimately dismissed.

Not long after these protests were filed, New Mexico Governor Bill Richardson released a review of the consistency of the Final EIS with state law. *See* 43 C.F.R. § 1610.3-2(e) (giving governors of affected states 60 days in which to "identify inconsistencies and provide recommendations in writing" to the BLM State Director); Governor Bill Richardson's Consistency Review of and Recommended Changes to the U.S. Dep't of the Interior, Bureau of Land Mgmt.'s Proposed Resource Mgmt. Plan Amend. and Final Envtl. Impact Statement for Fed. Fluid Minerals Leasing and Dev. in Sierra and Otero Counties, March 5, 2004, *available at* http:// www. emnrd. state. nm. us/ MAIN/ Administration/ News/ Govs Planfor Otero Mesa. pdf [hereinafter "Consistency Review"]. Governor Richardson concluded that the proposed management of the Otero Mesa was inconsistent with "numerous ... state laws, rules, policies, programs, and plans, particularly those that relate to protecting the Chihuahuan Desert and New Mexico's ground water." The Governor accordingly proposed an alternate management plan. His plan closed roughly the same areas to leasing and imposed roughly the same NSO, controlled surface use, and timing stipulations as those proposed in Alternative B, along with some increases in protection compared to that alternative. Most important to this appeal, the Governor proposed NSO stipulations that, unlike those proposed in Alternative B, would cover large portions of the Otero Mesa and Nutt grasslands. The

governor also proposed the imposition throughout the entire plan area of various surface use limitations not considered by BLM.

BLM declined to adopt the majority of the Governor's suggested modifications to the Final EIS and concluded that the EIS was consistent with "officially approved and adopted resource-related [state] policies and programs." However, the Agency did accept one major alteration proposed by the Governor, making the closure of 35,790 acres of core habitat on the Otero Mesa and Nutt grasslands permanent rather than temporary. The Agency announced this modification in a 23-page "supplement" to the Final EIS (the "SEIS"), issued on May 19, 2004. In response to the public outcry over the adoption of Alternative A-modified in the Final EIS, the SEIS provided a summary of changes between the Draft and Final EIS and some explanation of the reasons for the switch to Alternative A-modified. First, a segment addressing the Otero Mesa and Nutt grasslands explained that public comments led BLM to conclude that directional drilling-as required to access resources beneath the Mesa under either ***694** Alternative A or B-would not be feasible in the area, and accordingly, "there was a need to reevaluate the No Surface Occupancy stipulation, and consider a different approach that would similarly meet the resource objectives." Moreover, "BLM analysis indicates the grassland areas could be adequately protected utilizing a 5 percent maximum surface disturbance stipulation." Second, a subsection entitled "Further Analysis of Existing Data" concluded that because BLM predicted that the "reasonable foreseeable development" acreage would be 1,600 acres under any management scheme, the impacts of Alternatives A and A-modified on habitat would not appreciably differ. Notably, BLM based its prediction of likely development solely on the exploration history and current lease status of lands in the plan area, without accounting for the management scheme in effect. Because BLM anticipated the same habitat impacts under either alternative, the SEIS concluded that the adoption of A-modified was within "the scope and analysis of the Draft RMPA/EIS and d[id] not significantly alter the alternatives or analysis of the environmental consequences."

The SEIS did include a chart comparing the potential environmental impacts of Alternative B, Alternative A-modified, and the No-Action Alternative. However, the chart did not estimate likely surface impacts under the 5% and unitization requirements. Thus, the SEIS included no new environmental impacts analysis beyond that in the Final EIS-which itself simply adopted the analysis of the Draft EIS on relevant points. BLM published a notice of availability of the SEIS in the federal register and held a 30-day public comment period. Notice of Change to Proposed Resource Management Plan Amendment; Notice of Public Comment Period, 69 Fed.Reg. 30718 (May 28, 2004).

Governor Richardson appealed the rejection of the majority of his proposed modifications to BLM's National Director ("Director"). *See* 43 C.F.R. § 1610.3-2(e). In addition, several environmental groups sent a joint letter to the Director requesting that BLM allow public review and comment on the Governor's recommendations. *See id.* The Director declined to do so and issued a decision rejecting the Governor's appeal. Notice of BLM Director's Response to an Appeal From the Governor of New Mexico, 70 Fed.Reg. 3550 (Jan. 25, 2005). In the Record of Decision issued in January 2005 upon final adoption of the RMPA, BLM explained that there was no need for a separate comment period given the similarity between the Governor's proposal and Alternative B.

E

In April 2005, the State of New Mexico filed suit against BLM,[FN9] raising claims under NEPA, FLPMA, the NHPA, and the Administrative Procedure Act ("APA"), seeking declaratory and injunctive relief (the "New Mexico suit"). On May 20, BLM scheduled for July 20 a competitive oil and gas lease auction covering a 1600-acre parcel within the Bennett Ranch Unit (the "BRU Parcel"), adjacent to the parcel on which HEYCO found natural gas triggering the cascade of lease nominations that led to the RMPA process. Six days later, a coalition of environmental groups ***695** filed a second suit (the "NMWA suit").[FN10] As amended, this suit raised claims under NEPA, the ESA and FLPMA.

FN9. Plaintiffs included the State of New Mexico and its Governor; Attorney General; Historic Preservation Officer; Energy, Minerals and Natural Resources Department; Department of Game and Fish; and Envi-

ronmental Department (collectively "the State" or "New Mexico"). Named as defendants were BLM, its Director, and the New Mexico State Director (collectively "BLM").

FN10. The NMWA suit also named FWS, its regional and national directors, and the Department and Secretary of the Interior as defendants. Only the ESA claim implicates actions of the FWS defendants. Plaintiff organizations were NMWA, the Wilderness Society, the Sierra Club, the Natural Resources Defense Council, the National Wildlife Federation, the Southwest Environmental Center, Forest Guardians, and the New Mexico Wildlife Federation.

BLM went ahead with the July 20 auction, and HEYCO, the sole bidder, purchased the lease. During the course of litigation, however, BLM agreed not to execute the lease until resolution of the case.[FN11] HEYCO has continued to prepare for the possibility of drilling, obtaining permits to build a pipeline to service wells on this lease and others it holds nearby.

FN11. The parties stipulated before the district court that they would avoid seeking preliminary injunctive relief. As part of this stipulation, BLM agreed not to execute the July 20 lease "until this case has been resolved or February 15, 2006, whichever is earlier." When proceedings before the district court had not terminated by that date, BLM filed a "notice of continued deferral of lease for Bennett Ranch Unit parcel," seeking to avoid preliminary injunction proceedings and indicating that BLM would give notice before executing the lease. Because no such notice has been filed in the district court or this court, we assume execution continues to be deferred.

The NMWA suit was later consolidated with New Mexico's suit. Before the two matters were consolidated, however, the Independent Petroleum Association of New Mexico ("IPANM"), an organization promoting the interests of independent oil and gas producers in the state, moved to intervene in the New Mexico suit. After consolidation, IPANM moved to intervene in the NMWA suit as well. Both motions were unopposed. On August 8, 2005, the district court granted the motion to intervene in the State's suit. Although the court later denied as moot IPANM's intervention in the NMWA suit, we now grant its request to intervene in that case from this point forward.[FN12]

FN12. The district court explained that "[s]ince the two cases are consolidated, and IPANM had been allowed to intervene in [the State's suit], it is not necessary that IPANM seek to intervene in the consolidated cases." IPANM now contests this denial based on the well-established rule that consolidation is but a procedural tool and does not merge two cases such that parties to one case become parties to the other. *Johnson v. Manhattan Ry. Co.*, 289 U.S. 479, 496-97, 53 S.Ct. 721, 77 L.Ed. 1331 (1933); *Harris v. Illinois-California Express, Inc.*, 687 F.2d 1361, 1368 (10th Cir.1982). For the same reasons that IPANM qualified for mandatory intervention in the New Mexico suit, it also qualifies for mandatory intervention in the NMWA suit. *See* Fed.R.Civ.P. 24(a) (providing for mandatory intervention by a party with an interest in the litigation, whose ability to protect that interest will be impaired by disposal of the suit, and whose interests are not adequately represented by an existing party). We "generally follow[ ] a liberal view in allowing intervention under Rule 24(a)." *Elliott Indus. Ltd. P'ship v. BP Am. Prod. Co.*, 407 F.3d 1091, 1103 (10th Cir.2005). Although IPANM did not explicitly move to intervene, we construe its brief requesting intervention as such a motion.

After oral argument and an evidentiary hearing regarding Aplomado Falcon sightings in the plan area, the district court issued a September 27, 2006, opinion rejecting the plaintiffs' NEPA, ESA, FLPMA, and NHPA challenges to the RMPA process. However, the court also held that BLM violated NEPA when it failed to conduct a site-specific environmental analysis of the likely impacts of leasing the BRU Parcel and ordered BLM to prepare such an analysis. IPANM now appeals the district court's determination regarding the necessity of site-specific ***696** analysis. The State and NMWA cross-appeal all other

matters save the NHPA claim.

F

Since the issuance of the district court's opinion, the regulatory status of the Northern Aplomado Falcon has changed in a manner that affects this litigation. At the time of BLM's decisions to adopt the RMPA and to issue the July 20 lease, the Falcon was listed as an endangered species. Accordingly, in the district court, NMWA challenged BLM's ESA consultation process regarding effects of the RMPA on the Falcon. After the district court entered its order below, rejecting NMWA's argument on the merits, FWS reclassified the Falcon population in the area. In summer 2006, FWS issued a formal ruling in which it decided to reintroduce the Falcons into New Mexico and Arizona. *See* Establishment of a Nonessential Experimental Population of Northern Aplomado Falcons in New Mexico and Arizona, 71 Fed.Reg. 42298 (July 26, 2006). We must address whether these changes affect the liveness of NMWA's ESA challenge.

II

[2][3] We begin, as we must, by considering jurisdictional issues. [FN13] Because no other statute confers jurisdiction, our jurisdiction must flow from 28 U.S.C. § 1291, which allows appeal from all "final decisions" of the district courts. BLM argues that the district court's order was not a final decision, but rather, an unreviewable***697** remand under the administrative remand doctrine. In addition, BLM and IPANM argue that the plaintiffs' ESA claim is moot.[FN14]

> FN13. At the outset, we must ensure that the parties have standing to bring their claims. *Doctor John's, Inc. v. City of Roy*, 465 F.3d 1150, 1155 (10th Cir.2006). An environmental organization has standing if "its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization's purpose, and neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit." *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs., Inc.*, 528 U.S. 167, 181, 120 S.Ct. 693, 145 L.Ed.2d 610 (2000). The plaintiff organizations attached to their opening brief in the district court several declarations in which members of NMWA, the Wilderness Society, Forest Guardians, and the Southwest Environmental Center assert plans to use the Otero Mesa in the future for specified aesthetic, recreational, and employment pursuits that would be harmed by development. These declarations are plainly sufficient to support individual standing under *Summers v. Earth Island Institute*, ---U.S. ----, 129 S.Ct. 1142, 1149-51, 173 L.Ed.2d 1 (2009), and *Laidlaw*, 528 U.S. at 183-84, 120 S.Ct. 693. Each declaration describes the purpose of the organization as environmental conservation, and the interests at stake herein are "germane" to that purpose. *See Laidlaw*, 528 U.S. at 181, 120 S.Ct. 693. Further, because only declaratory and injunctive relief against BLM are sought, individual members need not be present for a court to afford relief. *See Colo. Envtl. Coal. v. Wenker*, 353 F.3d 1221, 1241 (10th Cir.2004). Accordingly, these four organizations have standing to pursue this appeal. Because no member of the remaining organizations submitted a declaration describing a sufficient individual injury, they lack standing.
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> In determining that New Mexico has standing because of the threat of environmental damage to lands within its boundaries, we consider that states have special solicitude to raise injuries to their quasi-sovereign interest in lands within their borders. *Massachusetts v. EPA*, 549 U.S. 497, 519-20, 127 S.Ct. 1438, 167 L.Ed.2d 248 (2007). Here, New Mexico alleges harm to its lands as well as a financial burden through the costs of lost resources such as water from the Salt Basin Aquifer. *Id.* at 522-23, 127 S.Ct. 1438 (holding that a state has standing to sue for relief from pending environmental harm so long as the harm is sufficiently concrete); *id.* at 518-19, 127 S.Ct. 1438 (recognizing that states may have concrete environmental interests even in lands they do not own) (citing *Georgia v. Tenn. Copper Co.*, 206 U.S. 230, 237, 27 S.Ct. 618, 51 L.Ed. 1038 (1907)). New Mexico has thus alleged an imminent injury that was caused by the RMPA and would be redressed by

an injunction.

FN14. Before the district court, New Mexico raised an NHPA claim challenging the adequacy of BLM's consultation with Native American tribes. On appeal, IPANM urges this court to determine that the State lacked standing to raise this claim. Because the district court ruled in favor of BLM and New Mexico did not appeal that determination, the NHPA issue is not before us, and we need not determine whether New Mexico had standing to raise it.

A

[4] "[A] decision is ordinarily considered final and appealable under § 1291 only if it ends the litigation on the merits and leaves nothing for the court to do but execute the judgment." *Quackenbush v. Allstate Ins. Co.*, 517 U.S. 706, 712, 116 S.Ct. 1712, 135 L.Ed.2d 1 (1996) (quotation omitted). The finality requirement is designed to avoid the waste and confusion engendered by piecemeal review of cases. *See Bender v. Clark*, 744 F.2d 1424, 1426 (10th Cir.1984). "[R]emand by a district court to an administrative agency for further proceedings is ordinarily not appealable because it is not a final decision." *Trout Unlimited v. U.S. Dep't of Agric.*, 441 F.3d 1214, 1219 (10th Cir.2006) (quoting *Bender*, 744 F.2d at 1426-27).

[5] In this case, the district court determined that BLM failed to conduct sufficient site-specific environmental analysis before auctioning leases for lands within the plan area and instructed the Agency to conduct further assessment if it wished to execute the lease in the Bennett Ranch Unit. All other challenges raised by the plaintiffs were resolved in BLM's favor. On its face, this order has all requisite components of a final order: It resolved all issues and granted the plaintiffs relief, enjoining issuance of the HEYCO lease until such analysis is complete. As the State points out, BLM is not bound to conduct a new EIS in response to the court's order; it could opt to refrain from granting any leases and thus obviate the need for an EIS. Even assuming that BLM completes a site-specific EIS, any challenge thereto must be brought in a new lawsuit.

BLM argues, however, that despite the appearance of finality, the court's order amounts to a "remand" to BLM and is thus non-final under administrative law principles. *See, e.g., Bender*, 744 F.2d at 1426-27. In effect, BLM argues that whenever a court order requires further action by an agency, the order constitutes a "remand," and we cannot review the matter until the agency acts and the parties return to court.

This argument fundamentally misunderstands the nature of a "remand" in an administrative case. Typically, a "remand" from a district court to an agency occurs when an agency has acted in an adjudicative capacity: A party to the adjudication appeals the agency's determination to a district court, and the district court instructs the agency to conduct further proceedings. Accordingly, when considering whether a remand has occurred in a given case, appellate courts must consider the nature of the agency action as well as the nature of the district court's order:

> [J]udicial review of administrative action comes in many forms. The administrative action may be essentially adjudicatory, essentially legislative, or some nonadversarial action such as grant of a license. The issue of finality is affected by the nature of the administrative proceeding and the framework of judicial review as well as the character of the remand order.

***698** 15B Charles Alan Wright, Arthur R. Miller & Edward H. Cooper, Federal Practice & Procedure: Jurisdiction and Related Matters § 3914.32, at 237 (2d ed.1992); *see also Caesar v. West*, 195 F.3d 1373, 1374 (Fed.Cir.1999) ("Remands to administrative agencies, *because they mark a continuation of the case,* are not generally considered final decisions for jurisdictional purposes." (emphasis added)); *Horizons Int'l, Inc. v. Baldrige*, 811 F.2d 154, 158-59 (3d. Cir.1987) ("The governing statute may authorize judicial review of agency action that is essentially adjudicatory[,] ... of legislative rulemaking which is neither adjudicatory nor adversarial[,] ... [or] of the non-adversarial grant of a license. Each of these different kinds of agency actions may present the issue of finality differently." (citations omitted)). Although our own circuit has not explicitly elucidated these criteria in the past, our precedent indicates that we view the remand rule as most appropriate in adjudicative contexts. *E.g., Rekstad v. First Bank Sys., Inc.*, 238 F.3d 1259, 1262 (10th Cir.2001) (discussing exceptions to the remand rule which exist because "if a

district court remands an issue to an administrative agency and essentially instructs the agency to *rule in favor of the plaintiff*," the agency may be precluded from appeal (emphasis added)); *Baca-Prieto v. Guigni*, 95 F.3d 1006, 1008 (10th Cir.1996) (remanding a case to an Immigration Judge for further adjudication and noting that "this circuit follows the prevailing view that a district court order remanding *an action* to an administrative agency *for further proceedings* is generally considered a nonfinal decision" (emphases added)); *Bender*, 744 F.2d at 1426 (explaining that the district court, rather than making any final determination itself, had remanded for the agency to apply a different legal standard when adjudicating the determination at issue).

Looking to the characteristics that influence finality, including the nature of the agency proceeding and the character of the dispositive district court order, Wright, *supra,* the order below does not share the features of a typical remand. Here, the agency proceeding underlying the RMPA was a policymaking process based on the exercise of BLM expertise, better described as quasi-legislative than adjudicative. In challenging that proceeding, the plaintiffs did not contend that BLM wrongfully adjudicated their rights, but rather that its policymaking process was contrary to law and injured their interests. For that reason, BLM appeared in the district court as a traditional adversarial party, defending its own actions against challenges by the State and NMWA, rather than defending a ruling made by the Agency in a controversy between parties appearing before it.

As for the nature of the district court's order, it simply does not square with the traditional notion of a "remand," wherein the reviewing court returns an action to a lower court for further proceedings. The court's order did not require BLM to recommence a proceeding, or indeed to take any action at all-it simply enjoined BLM from further NEPA violations.[FN15] If the Agency wishes to allow oil and gas leasing in the plan area it must undertake additional analysis based on the district court's memorandum opinion, but it retains the option of ceasing such proceedings entirely. Thus, the nature of the court's injunction is wholly unlike a traditional remand.

FN15. Though a district court's label for its own action carries little weight in determining the nature of that action on appeal, we note that the court below did not couch its disposition as a "remand."

***699** As NMWA points out, if we accepted BLM's argument that an order of this sort constitutes a "remand" simply because an agency is involved, the practical consequences would be drastic: "[E]very victory by a plaintiff in a case brought pursuant to the APA [would] necessarily [be] a non-final 'remand' order." [FN16] NMWA Reply Br. at 3. Had Congress wished to allow appeal under the APA only when an agency prevails on all claims in the district court, it could have done so explicitly. It is unsurprising, then, that we have often treated district court orders requiring further agency action under NEPA as final and reviewable in the past.[FN17] *See, e.g., Middle Rio Grande Conservancy Dist. v. Norton*, 294 F.3d 1220, 1225 (10th Cir.2002) (reviewing a district court decision requiring FWS to conduct an environmental impact study); *Sierra Club v. Hodel*, 848 F.2d 1068, 1074 (10th Cir.1988) (reviewing a district court decision requiring BLM to conduct environmental analysis), *overruled on other grounds by Vill. of Los Ranchos De Albuquerque v. Marsh*, 956 F.2d 970, 973 (10th Cir.1992) (en banc); *see also High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 640 (9th Cir.2004) (reviewing a district court decision requiring the Forest Service to conduct environmental analysis); *Sierra Club v. Glickman*, 156 F.3d 606, 612 (5th Cir.1998) (reviewing a district court decision requiring the Department of Agriculture to consult under the ESA); *Nat'l Audubon Soc'y v. Hoffman*, 132 F.3d 7, 12, 19 (2d Cir.1997) (reviewing a district court decision requiring the Forest Service to conduct environmental analysis).

FN16. This statement is technically overinclusive because we recognize exceptions to the administrative remand rule in a narrow set of cases. *See Graham v. Hartford Life & Accident Ins. Co.*, 501 F.3d 1153, 1158-59 (10th Cir.2007).

FN17. BLM points to one case where we applied the administrative remand doctrine to bar appellate review of a district court order holding that the Forest Service had violated FLPMA. In *Trout Unlimited*, 441 F.3d at 1218-19, we held that a district court decision instructing the Forest Service to reconsider the issuance of a permit for reser-

> voir use was not a "final order." However, in that case the plaintiffs did not argue that the order below was final, but only that an exception to the finality rule applied. *Id.* at 1218. Thus, even if we considered the lower court order in that case similar for finality purposes to the memorandum opinion in this case, *Trout Unlimited* does not control our analysis. Moreover, the permitting context of *Trout Unlimited* falls closer to the traditional concept of adjudication than the resource management plan process at issue here because it settles the rights of specific parties.

Both the nature of BLM's proceeding and the character of the decision below indicate that viewing that decision as a "remand" would strain common sense. Our treatment of similar orders in past cases bolsters that conclusion. We hold that the district court's order was not an administrative remand, but rather a final order that we have jurisdiction to review under 28 U.S.C. § 1291.

B

[6] BLM and IPANM argue that FWS's summer 2006 decision to reintroduce the Aplomado Falcon into the plan area moots NMWA's challenge under the ESA. We agree and vacate the portion of the district court's order addressing this issue.

1

NWMA argues that BLM failed to comply with § 7(a)(2) of the ESA, which requires all federal agencies to formally consult with the federal wildlife agencies to "insure that any [agency action] is not ***700** likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species." [FN18] 16 U.S.C. § 1536(a)(2); *see also* 50 C.F.R. § 402.01(b) (providing for "all ... listed species" other than those overseen by the National Marine Fisheries Service, agencies "shall contact the FWS"). Despite the name, consultation is more than a mere procedural requirement, as it allows FWS to impose substantive constraints on the other agency's action if necessary to limit the impact upon an endangered species. *Natural Res. Defense Council v. Houston*, 146 F.3d 1118, 1125 (9th Cir.1998); *see* 16 U.S.C. § 1536(b)(4), (d).

> FN18. During the pendency of this appeal, a series of executive actions buffeted this heretofore settled legal landscape. On December 16, 2008, the Departments of Commerce and Interior issued a final rule jointly adopting a regulation that narrowed the circumstances in which agencies must initiate consultation with FWS. *See* Interagency Cooperation Under the Endangered Species Act, 73 Fed.Reg. 76272 (Dec. 16, 2008) (to be codified at 50 C.F.R. pt. 402). On March 3, 2009, however, President Obama requested a review of the new regulation and instructed agencies in the interim to follow consultation procedures as they existed before its adoption. Memorandum for the Heads of Executive Departments and Agencies, 74 Fed.Reg. 9753, 9753 (March 6, 2009). Because BLM must currently proceed as it would have prior to the December 16 regulation, we consider the procedures then in effect throughout our analysis.

NMWA argues that BLM's September 2003 about-face regarding the likelihood of the RMPA adversely affecting the Falcon was arbitrary and capricious. Because of the summer 2006 reintroduction decision, however, the Falcon's status under the ESA has changed. At the time of BLM's issuance of the Final EIS, the Falcon was listed as an endangered species, to which § 7(a)(2) applied. *See* Determination of Northern Aplomado Falcon to Be an Endangered Species, 51 Fed.Reg. at 6686-88; *see also* 16 U.S.C. § 1532(6) (defining the term "endangered species"), § 1533(a) (empowering the Secretary of the Interior to "determine whether any species is an endangered species"). Since the promulgation of the reintroduction rule, the Falcon population in the plan area falls under § 10(j) of the ESA, applicable to populations which are artificially introduced into an area outside the naturally existing range of a species. These populations are classified as "experimental." 16 U.S.C. § 1539(j); Establishment of Nonessential Experimental Population of Northern Aplomado Falcons in New Mexico and Arizona, 71 Fed.Reg. at 42298. The ESA provides that nonessential experimental populations outside the National Park and National Wildlife Refuge system are treated as "proposed to be listed" rather than endangered or threatened. §

1539(j)(2)(C); 50 C.F.R. § 17.83(a). As discussed, the § 7(a)(2) formal consultation process applies only to species listed as threatened or endangered and not to species that are merely proposed for listing. *Compare* § 1536(a)(2) (requiring agencies to *consult* with the wildlife agencies regarding endangered and threatened species), with (a)(4) (requiring agencies to *confer* with the wildlife agencies regarding any species "proposed to be listed"); *see Enos v. Marsh*, 769 F.2d 1363, 1367-69 (9th Cir.1985) (interpreting the term "confer" as requiring only an informal discussion process rather than formal § 7 consultation).[FN19] Accordingly,***701** BLM and IPANM ask us to conclude that NMWA's ESA challenge is moot because the Falcon population at issue is no longer subject to consultation, a contention we review de novo. *See Chihuahuan Grasslands Alliance v. Kempthorne*, 545 F.3d 884, 891 (10th Cir.2008).[FN20]

FN19. Although this distinction between the term "consult" and the term "confer" is not apparent on the face of the statute and has not been explicitly adopted in this circuit, it has been adopted by FWS and endorsed by the Ninth Circuit in *Enos*. *See* 50 C.F.R. § 402.10 ("A conference between a Federal agency and the Service shall consist of informal discussions concerning an action that is likely to jeopardize the continued existence of the proposed species."); *see also* Establishment of a Nonessential Experimental Population of Northern Aplomado Falcons in New Mexico and Arizona, 71 Fed.Reg. at 42302 ("[Nonessential experimental populations] provide additional flexibility because Federal agencies are not required to consult with us under section 7(a)(2).... Section 7(a)(4) requires Federal agencies to confer (rather than consult) with the Service on actions that are likely to jeopardize the continued existence of [such a] species."). The parties do not argue before us that this interpretation is mistaken, so we assume its validity for purposes of this case.

FN20. NMWA points out that BLM did not argue mootness before the district court and urges us to reject BLM's arguments on that basis. This suggestion is unavailing; as a component of our jurisdiction, mootness is non-waivable. *Mink v. Suthers*, 482 F.3d 1244, 1257 (10th Cir.2007).

[7] In order for the federal courts to exercise jurisdiction, Article III of the Constitution requires that the controversy between the parties remain live throughout all stages of litigation. *United States v. Seminole Nation of Okla.*, 321 F.3d 939, 943 (10th Cir.2002). "A federal court has no power to give opinions upon moot questions or declare principles of law which cannot affect the matter in issue in the case before it." *S. Utah Wilderness Alliance v. Smith*, 110 F.3d 724, 727 (10th Cir.1997). Attempting to persuade us that the controversy regarding the Falcon's ESA status remains live, NMWA directs us to a lawsuit currently pending before our court challenging the legality of FWS's decision to reclassify the Falcon on the basis that the "reintroduction" area is already within the existing range of the species. *Forest Guardians v. U.S. Fish & Wildlife Serv.*, No. 08-2226 (10th Cir. filed Sept. 24, 2008); *see* 16 U.S.C. § 1539(j); 50 C.F.R. § 17.80(a) (defining the term "experimental population" to include an introduced population "only when, and at such times as the [introduced] population is wholly separate geographically from nonexperimental populations of the same species"). A favorable outcome for the appellant environmental group in that case would mean that the Falcon population at issue would once again be categorized as "endangered" and subject to the formal consultation requirement. But because mootness requires a live controversy at all stages, we must consider whether the controversy is live at the current phase of litigation under current law. Nor do we think it appropriate to prejudge the merits of another case before our court in order to determine whether the outcome the plaintiffs hope for can be considered "likely." Absent an applicable exception, the ESA challenge is moot, and we may proceed no further.

2

[8] Despite its jurisdictional nature, mootness does admit of certain exceptions. *See United States v. Seminole Nation of Okla.*, 321 F.3d 939, 944 (10th Cir.2002). NMWA argues that the Falcon's reclassification, and the resulting inapplicability of the formal consultation requirement, amounted to a voluntary cessation of illegal behavior on the part of BLM and FWS. When a party moots a case by voluntarily changing its own conduct, the Supreme Court instructs us to view mootness arguments with suspicion

because the offending party might otherwise resume that conduct as soon as the case is dismissed. *Laidlaw*, 528 U.S. at 189, 120 S.Ct. 693. This voluntary cessation exception derives ***702** from "the principle that a party should not be able to evade judicial review ... by temporarily altering questionable behavior." *City News & Novelty, Inc. v. City of Waukesha*, 531 U.S. 278, 284 n. 1, 121 S.Ct. 743, 148 L.Ed.2d 757 (2001); *Chihuahuan Grasslands Alliance*, 545 F.3d at 893. Thus, for a case to become moot, it must be "absolutely clear that the allegedly wrongful behavior could not reasonably be expected to recur." *Laidlaw*, 528 U.S. at 189, 120 S.Ct. 693.

This sensible rule does not apply to BLM, for a simple reason: FWS, not BLM, made the decision to alter the Falcon's status by reintroducing it to the plan area. Within the ESA context, BLM must engage in interagency consultation with FWS. 16 U.S.C. § 1536(a)(2); 50 C.F.R. § 402.01. Thus, for consultation purposes, BLM and FWS operate as different actors, each with its own goals and responsibilities, and it was FWS that decided to reintroduce and thus reclassify the Falcon. We see no attempt by BLM to alter its conduct and thereby evade judicial review.

As for FWS, we agree that it was that agency's voluntary decision to release Falcons into the plan area that led to the Falcon's change in regulatory status. Based on that decision, FWS granted $295,793 to nonprofit organization the Peregrine Fund to begin releasing birds on BLM lands in New Mexico in 2007. *Forest Guardians,* J.A. at 461-72 (copy of grant agreement between FWS and the Peregrine Fund).[FN21] The Fund has released some 100 birds altogether, of which at least 50 have successfully reached independence in the wild and some have begun to reproduce. Bureau of Land Mgmt., U.S. Dep't of Interior, Rare Falcons Back in New Mexico, http:// www. blm. gov/ nm/ st/ en/ fo/ Socorro_ Field_ Office/ features/ rare_ falcons_back.html (last visited March 17, 2009) [hereinafter Rare Falcons Back]; Patricia Zenone, U.S. Fish & Wildlife Serv., Northern Aplomado Falcon Reintroductions in New Mexico in 2008, Fish & Wildlife Journal, Sep. 5, 2008, http:// www. fws. gov/ arsnew/ regmap. cfm? arskey= 24842 [hereinafter Falcon Reintroductions]. The presence of these birds makes it a practical impossibility for FWS to reverse reintroduction because an actual experimental population of Falcons now exists in the area at issue.[FN22] Thus, FWS cannot voluntarily reclassify the Falcon population in the area as "endangered" and thus revive plaintiffs' ESA challenge. We have before us an example of the rare case where it is "absolutely clear that the allegedly wrongful behavior could not reasonably be expected***703** to recur." *Laidlaw*, 528 U.S. at 189, 120 S.Ct. 693.

FN21. We take judicial notice of this document, which is included in the record before us in the *Forest Guardians* matter. *Van Woudenberg ex rel. Foor v. Gibson*, 211 F.3d 560, 568 (10th Cir.2000), *abrogated on other grounds by McGregor v. Gibson*, 248 F.3d 946, 955 (10th Cir.2001) (en banc) ("[T]he court is permitted to take judicial notice of its own files and records."); *see also* Fed.R.Evid. 201(b).

FN22. The websites of two federal agencies, BLM and FWS, and the minutes of the New Mexico State Resource Advisory Council contain numerous references to the releases. *E.g.* Rare Falcons Back; Falcon Reintroductions; Bureau of Land Mgmt., New Mexico Resource Advisory Council, Minutes, http:// www. blm. gov/ nm/ st/ en/ info/ resource_ advisory. html (last visited March 18, 2009) (follow links for March 2008 and December 2006). We conclude that the occurrence of Falcon releases is not subject to reasonable factual dispute and is capable of determination using sources whose accuracy cannot reasonably be questioned, and we take judicial notice thereof. *See* Fed.R.Evid. 201(b); *see also O'Toole v. Northrop Grumman Corp.*, 499 F.3d 1218, 1225 (10th Cir.2007) ("It is not uncommon for courts to take judicial notice of factual information found on the world wide web."); *City of Sausalito v. O'Neill*, 386 F.3d 1186, 1223 n. 2 (9th Cir.2004) ("We may take judicial notice of a record of a state agency not subject to reasonable dispute.").

Accordingly, NMWA's ESA challenge to the consultation process between BLM and FWS regarding the Northern Aplomado Falcon is moot.

3

[9] Given that NMWA has lost the opportunity to

appeal from the district court's order rejecting its challenge to BLM's ESA consultation process, NMWA requests that we vacate the portion of that order on point. "Vacatur is in order when mootness occurs through happenstance-circumstances not attributable to the parties-or ... the unilateral action of the party who prevailed in the lower court." *Chihuahuan Grasslands Alliance*, 545 F.3d at 891 (quoting *Arizonans for Official English v. Arizona*, 520 U.S. 43, 71-72, 117 S.Ct. 1055, 137 L.Ed.2d 170 (1997) (omission in original)). Thus, we vacate that portion of the district court's decision.

III

Turning to the merits of those issues over which we have jurisdiction, we first consider the plaintiffs' NEPA claims. The centerpiece of environmental regulation in the United States, NEPA requires federal agencies to pause before committing resources to a project and consider the likely environmental impacts of the preferred course of action as well as reasonable alternatives. *See* 42 U.S.C. § 4331(b) (congressional declaration of national environmental policy); *U.S. Dep't of Transp. v. Public Citizen*, 541 U.S. 752, 756-57, 124 S.Ct. 2204, 159 L.Ed.2d 60 (2004); *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 371, 109 S.Ct. 1851, 104 L.Ed.2d 377 (1989); *Forest Guardians v. U.S. Forest Serv.*, 495 F.3d 1162, 1172 (10th Cir.2007). By focusing both agency and public attention on the environmental effects of proposed actions, NEPA facilitates informed decisionmaking by agencies and allows the political process to check those decisions. *Marsh*, 490 U.S. at 371, 109 S.Ct. 1851; *Balt. Gas & Elec. Co. v. Natural Res. Defense Council*, 462 U.S. 87, 97, 103 S.Ct. 2246, 76 L.Ed.2d 437 (1983) (identifying the facilitation of informed agency decisionmaking and public involvement as the "twin aims" of NEPA). The requirements of the statute have been augmented by longstanding regulations issued by the Council on Environmental Quality ("CEQ"), to which we owe substantial deference. *Marsh*, 490 U.S. at 372, 109 S.Ct. 1851.

[10] Before embarking upon any "major federal action," an agency must conduct an environmental assessment ("EA") to determine whether the action is likely to "significantly affect[ ] the quality of the human environment." 42 U.S.C. § 4332(2)(C); *Carpenter*, 463 F.3d at 1136 n. 4; 40 C.F.R. § 1508.9. If not, the agency may issue a "finding of no significant impact" ("FONSI") stating as much. 40 C.F.R. § 1508.13. But if so, the agency must prepare a thoroughgoing EIS, as BLM did here, assessing the predicted impacts of the proposed action on all aspects of the environment, including indirect and cumulative impacts.[FN23] 42 U.S.C. § 4332(2)(C); 40 C.F.R. pt. 1502 & §§ 1508.11, 1508.25(c). In addition, an EIS must "rigorously explore and objectively evaluate" all reasonable alternatives to a proposed action, in order to compare the environmental impacts of all available courses of action. 40 C.F.R. § 1502.14. For those alternatives eliminated from detailed study, the EIS must briefly discuss ***704** the reasons for their elimination. *Id.* At all stages throughout the process, the public must be informed and its comments considered. § 1503.1(a)(4) (public comment must be requested after publication of a draft EIS); § 1503.1(b) (public comment may be requested after publication of a final EIS but before a decision is made); § 1506.10 (requiring notice of draft and final EISs to be published in the federal register and setting time periods for public comment); § 1505.2 (requiring publication of a record of decision after the decision is made).

FN23. Alternatively, if the agency prefers, it may issue an EIS without initially completing an EA. *Utah Envtl. Cong. v. Russell*, 518 F.3d 817, 821 (10th Cir.2008).

[11] NEPA is silent, however, regarding the *substantive* action an agency may take-the Act simply imposes *procedural* requirements intended to improve environmental impact information available to agencies and the public. *Marsh*, 490 U.S. at 371, 109 S.Ct. 1851. Even if scrupulously followed, the statute "merely prohibits uninformed-rather than unwise-agency action." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351, 109 S.Ct. 1835, 104 L.Ed.2d 351 (1989).

[12] As with other challenges arising under the APA, we review an agency's NEPA compliance to see whether it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(a); *accord Utah Shared Access Alliance v. United States Forest Serv.*, 288 F.3d 1205, 1208 (10th Cir.2002); *see also Russell*, 518 F.3d at 823 (NEPA challenges must be brought under the APA because NEPA provides no private cause of action). An agency's decision is arbitrary and capri-

cious if the agency (1) "entirely failed to consider an important aspect of the problem," (2) "offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise," (3) "failed to base its decision on consideration of the relevant factors," or (4) made "a clear error of judgment." *Utah Envtl. Cong. v. Troyer*, 479 F.3d 1269, 1280 (10th Cir.2007) (quotations omitted). Deficiencies in an EIS that are mere "flyspecks" and do not defeat NEPA's goals of informed decisionmaking and informed public comment will not lead to reversal. *E.g.*, *Citizens for Alternatives to Radioactive Dumping v. U.S. Dep't of Energy*, 485 F.3d 1091, 1098 (10th Cir.2007); *Ecology Ctr., Inc. v. U.S. Forest Serv.*, 451 F.3d 1183, 1189-90 (10th Cir.2006).

When called upon to review factual determinations made by an agency as part of its NEPA process, short of a "clear error of judgment" we ask only whether the agency took a "hard look" at information relevant to the decision. *See Citizens' Comm. to Save Our Canyons v. Krueger*, 513 F.3d 1169, 1178 (10th Cir.2008) (quotation omitted); *see also* 33 Charles Alan Wright & Charles H. Koch, Jr., Federal Practice & Procedure § 8335, at 176 (2006) ("Without engaging in review of the actual resolution of factual questions of this variety, courts, by using the hard look standard, assure that the agency did a careful job at fact gathering and otherwise supporting its position."). In considering whether the agency took a "hard look," we consider only the agency's reasoning at the time of decisionmaking, excluding post-hoc rationalization concocted by counsel in briefs or argument. *Utahns for Better Transp. v. U.S. Dep't of Transp.*, 305 F.3d 1152, 1165 (10th Cir.2002) (citing *Olenhouse v. Commodity Credit Corp.*, 42 F.3d 1560, 1565 (10th Cir.1994)). "A presumption of validity attaches to the agency action and the burden of proof rests with the appellants who challenge such action." *Citizens' Comm.*, 513 F.3d at 1176. We review the district court de novo, applying the APA standard of review to the agency's***705** actions without deferring to the district court's application of that standard. *Id.*

A

[13] According to the State and NMWA, NEPA requires BLM to complete a supplemental EIS specifically analyzing the likely environmental effects of Alternative A-modified before adopting that alternative as the new management plan for the area, and its failure to do so was arbitrary and capricious. An agency must prepare a supplemental assessment if "[t]he agency makes substantial changes in the proposed action that are relevant to environmental concerns." [FN24] 40 C.F.R. § 1502.9(c)(1)(i) (emphases added). When "the relevant environmental impacts have already been considered" earlier in the NEPA process, no supplement is required. *Friends of Marolt Park v. U.S. Dep't of Transp.*, 382 F.3d 1088, 1096-97 (10th Cir.2004). In a guide to NEPA published in the Federal Register, the CEQ states that a supplement is unnecessary when the new alternative is "qualitatively within the spectrum of alternatives that were discussed in the draft" and is only a "minor variation" from those alternatives. Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, 46 Fed.Reg. 18026, 18035 (Mar. 17, 1981) [hereinafter "Forty Questions"].[FN25]

FN24. A supplemental EIS is also required when "[t]here are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." § 1502.9(c)(1)(ii). Courts face cases arising under this prong of the regulation more frequently. *See, e.g.*, *Marsh*, 490 U.S. at 374, 109 S.Ct. 1851; *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1177-78 (10th Cir.1999). New Mexico's challenge, however, is based on changes in the proposed action rather than new circumstances or information.

FN25. We consider this document "persuasive authority offering interpretive guidance" regarding the meaning of NEPA and the implementing regulations. *Davis v. Mineta*, 302 F.3d 1104, 1125 n. 17 (10th Cir.2002).

Rather than offer additional environmental analysis of Alternative A-modified, BLM concluded in the SEIS that no further analysis was necessary because the same or less surface area would ultimately be developed under Alternative A or A-modified. For this reason, BLM determined that the change from Alternative A to Alternative A-modified was within

the scope and analysis of the Draft EIS and did not substantially alter the environmental consequences as required to trigger the § 1502.9 supplementation requirement. BLM and IPANM continue to argue that Alternative A-modified was within the scope of the previous analysis, although for different reasons than a similarity in the final number of acres likely to be developed.[FN26]

> FN26. It is not entirely clear that these arguments survive the *Olenhouse* rule permitting us to consider only the justification the Agency provided at the time of its decision. 42 F.3d at 1565. Giving BLM the benefit of the doubt, we will consider all of BLM's justifications as subspecies of the general argument that Alternative A-modified is "within the scope" of the analysis conducted in the Final EIS.

In its ruling, the district court found that the question of whether Alternative A-modified would lead to greater habitat fragmentation than Alternative A was a factual dispute.[FN27] It then found that there was sufficient evidence in the record to support BLM's prediction; thus, the failure***706** to conduct additional analysis in the SEIS was not arbitrary and capricious. The court also found that actual habitat fragmentation under Alternative A-modified was dependent on factors that could not be analyzed at the planning stage.

> FN27. However, the court noted that it would not have accepted an argument that the same number of acres would be developed under either alternative; rather, the Agency was required to conclude that the *fragmentation* resulting from development under either plan would be similar.

On appeal, BLM and IPANM argue that BLM was not required to conduct further analysis in the SEIS because surface impacts were analyzed in the Draft EIS, and those impacts would differ only in degree, not in kind, under Alternative A-modified. Should we disagree, they urge us to adopt the district court's latter rationale, that such impacts cannot practicably be analyzed until the leasing stage when those effects become more definitive.[FN28] They further urge that, even if we reject these arguments, any error was harmless. BLM and IPANM no longer advance the position that analysis is excused because either the amount of surface development or the ultimate amount of habitat fragmentation is similar under Alternatives A and A-modified. This removes from the scope of our review one of the two rationales relied upon by the district court. *DeJulius v. New Eng. Health Care Employees Pension Fund*, 429 F.3d 935, 943 (10th Cir.2005) ("[T]he other ground asserted below ... has not been raised on appeal and is thus waived.").

> FN28. IPANM also argues Alternative A-modified is within the range of alternatives previously considered because it is less protective than Alternative B but more protective than the No-Action Alternative. This argument confuses our standard for assessing the reasonableness of the range of alternatives presented in an EIS-discussed in Part III.B below-with the standard for determining whether a supplemental EIS is required. Suffice it to say, an agency may not decline to analyze the alternative it actually adopts simply because the overall level of environmental protection it offers falls between that offered by analyzed alternatives.

1

[14] As described above, Alternative A and Alternative A-modified differ primarily in the restrictions they place on surface disturbances on the Otero Mesa. Alternative A proposed a qualitative restriction on development: Disturbances would only be allowed near existing roads. Thus, they would remain contiguous rather than scattering across the landscape. By contrast, A-modified imposes a quantitative restriction: Disturbances may occupy only five percent of the Mesa at any one time.

By arguing that a difference in the degree of habitat fragmentation did not require a fresh impacts analysis, BLM neglects the fundamental nature of the environmental problem at issue. As is well documented in the record before us, the location of development greatly influences the likelihood and extent of habitat preservation. Disturbances on the same total surface acreage may produce wildly different impacts on plants and wildlife depending on the amount of contiguous habitat between them. BLM's analysis of Alternative A assumed the protections of large contiguous pieces of habitat from development. Alternative

A-modified muddied this picture, doing away with any requirement of continuity of undisturbed lands. Although A-modified also requires developers to work together to minimize impacts-potentially increasing the continuity of surface developments-BLM provided so little explanation of this "unitization" restriction that it is impossible to tell whether it would create the same clustering of impacts as would the proximity restriction in Alternative A. FN29

> FN29. We are puzzled by BLM's assertion that the two alternatives are "qualitatively identical" because they share a *goal* of minimizing habitat fragmentation. The alternatives are only "qualitatively identical" if they would lead to identical development in identical locations.

***707** Moreover, this is not a case where components of fully-analyzed alternatives were recombined or modified to create a "new" alternative whose impacts could easily be predicted from the existing analysis. *Cf.* Forty Questions, 46 Fed.Reg. at 18035 (noting that a decision to build 5,000 housing units would be within the scope of an EIS analyzing the effects of 4,000 or 6,000 houses and would not require a supplement). Nothing in the Draft EIS so much as hinted at a percentage-based surface occupancy restriction for the Otero Mesa, and there is no direct or reliable way to compare the fragmentation effects of that restriction to the effects of the restrictions analyzed in the EIS. *See California v. Block*, 690 F.2d 753, 772 (9th Cir.1982) (concluding that supplemental analysis is required when the selected alternative "could not fairly be anticipated by reviewing the draft EIS alternatives").

More generally, we cannot accept that because the *category* of impacts anticipated from oil and gas development were well-known after circulation of the Final EIS, any change in the location or extent of impacts was immaterial. Unsurprisingly, BLM provides no statutory or case law support for this proposition. If a change to an agency's planned action affects environmental concerns in a different manner than previous analyses, the change is surely "relevant" to those same concerns. 40 C.F.R. § 1502.9(c)(1)(i). We would not say that analyzing the likely impacts of building a dirt road along the edge of an ecosystem excuses an agency from analyzing the impacts of building a four-lane highway straight down the middle, simply because the type of impact-habitat disturbance-is the same under either scenario. *See, e.g., Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1291-92 (1st Cir.1996) (holding that a supplement was required where the adopted alternative "entail[ed] a different configuration of activities and locations, not merely a reduced version of a previously-considered alternative"). The situation at hand is no different. NEPA does not permit an agency to remain oblivious to differing environmental impacts, or hide these from the public, simply because it understands the general type of impact likely to occur. Such a state of affairs would be anathema to NEPA's "twin aims" of informed agency decisionmaking and public access to information. *See Marsh*, 490 U.S. at 371, 109 S.Ct. 1851; *Balt. Gas & Elec. Co.*, 462 U.S. at 97, 103 S.Ct. 2246; *Citizens Comm.*, 513 F.3d at 1177-78.

BLM's unanalyzed, conclusory assertion that its modified plan would have the same type of effects as previously analyzed alternatives does not allow us to endorse Alternative A-modified as "qualitatively within the spectrum of alternatives" discussed in the Draft EIS. Because location, not merely total surface disturbance, affects habitat fragmentation, Alternative A-modified was qualitatively different and well outside the spectrum of anything BLM considered in the Draft EIS, and BLM was required to issue a supplement analyzing the impacts of that alternative under 40 C.F.R. § 1502.9(c)(1)(i).

2

BLM and IPANM also argue that even if the changes in fragmentation impacts between Alternative A and A-modified require further environmental analysis, such analysis was impracticable until the leasing stage because the overall level of development could not be sufficiently predicted at the RMPA stage. All environmental analyses required by NEPA must be conducted at "the earliest possible time." 40 C.F.R. § 1501.2; *see also* ***708***Kern v. BLM*, 284 F.3d 1062, 1072 (9th Cir.2002) ("NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather, it is designed to require such analysis as soon as it can reasonably be done."). Because the record reveals that BLM conducted an internal analysis of the fragmentation impacts of Alternative A-modified in 2004, we are convinced that such analysis was possible. Accordingly, we hold that

NEPA requires BLM to release a supplemental EIS thoroughly analyzing its newly minted alternative at the planning stage.

3

[15] Finally, BLM asks that we hold any error in its analysis to be harmless. The Agency contends that because members of the public had access to the SEIS and record of decision and were allowed to comment on each of these, the purposes of NEPA were fulfilled without further analysis. *See* 5 U.S.C. § 706 (establishing harmless error review of APA cases); *Bar MK Ranches v. Yuetter*, 994 F.2d 735, 740 (10th Cir.1993) ("The harmless error rule applies to judicial review of administrative proceedings, and errors in such administrative proceedings will not require reversal unless Plaintiffs can show they were prejudiced."). While we agree that BLM's communication with the public, as far as it went, furthered NEPA's goals, it was no substitute for the substantive analysis required by section 1502.9(c)(1)(i). A public comment period is beneficial only to the extent the public has meaningful information on which to comment, and the public did not have meaningful information on the fragmentation impacts of Alternative A-modified. Informed public input can hardly be said to occur when major impacts of the adopted alternative were never disclosed. Thus, we cannot agree that the failure to thoroughly analyze the environmental impacts of Alternative A-modified in a public NEPA document was harmless.

Of course, every change however minor will not necessitate a new substantive analysis and repetition of the EIS process. To make such a requirement would lead agencies into Xeno's paradox, always being halfway to the end of the process but never quite there. The selection of Alternative A-modified was not a minor change or oversight presenting such a dilemma.

B

Aside from the need to analyze the specific land use plan BLM eventually selected, NMWA also charges that BLM analyzed an unduly narrow range of alternatives during the EIS process. The Agency disagrees, arguing that Alternatives A and B and the No-Action Alternative were representative of the full range of reasonable planning alternatives for the area.

[16] The "heart" of an EIS is its exploration of possible alternatives to the action an agency wishes to pursue. 40 C.F.R. § 1502.14. Every EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). Without substantive, comparative environmental impact information regarding other possible courses of action, the ability of an EIS to inform agency deliberation and facilitate public involvement would be greatly degraded. *See Baltimore Gas & Elec. Co.*, 462 U.S. at 97, 103 S.Ct. 2246. While NEPA "does not require agencies to analyze the environmental consequences of alternatives it has in good faith rejected as too remote, speculative, or impractical or ineffective," it does require the development of "information sufficient to permit a reasoned choice of alternatives as far as environmental aspects are concerned." *Dombeck*, 185 F.3d at 1174 (quotations and alteration omitted). It follows that an ***709** agency need not consider an alternative unless it is significantly distinguishable from the alternatives already considered. *Westlands Water Dist. v. U.S. Dep't of the Interior*, 376 F.3d 853, 868 (9th Cir.2004).

[17][18] We apply the "rule of reason" to determine whether an EIS analyzed sufficient alternatives to allow BLM to take a hard look at the available options. *Id.* The reasonableness of the alternatives considered is measured against two guideposts. First, when considering agency actions taken pursuant to a statute, an alternative is reasonable only if it falls within the agency's statutory mandate. *Westlands*, 376 F.3d at 866. Second, reasonableness is judged with reference to an agency's objectives for a particular project.[FN30] *See Dombeck*, 185 F.3d at 1174-75; *Simmons v. U.S. Army Corps of Eng'rs*, 120 F.3d 664, 668-69 (7th Cir.1997); *Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1520 (9th Cir.1992).

FN30. While an agency may restrict its analysis to alternatives that suit the "basic policy objectives" of a planning action, *Seattle Audubon Soc'y v. Moseley*, 80 F.3d 1401, 1404 (9th Cir.1996), it may do so only as long as "the statements of purpose and need drafted to guide the environmental review process ... are not unreasonably narrow," *Dombeck*, 185 F.3d at 1175. NMWA does not argue that the RMPA's statement of purpose was unreasonably narrow, as indeed

it was not.

NMWA argues that BLM should have analyzed a management alternative that closed more than 17% of the plan area to leasing (the amount of land closed by Alternative B, the most restrictive option analyzed). BLM counters that although none of the analyzed plans would permanently close the bulk of the plan area to development, the alternatives varied widely in the acreage subject to various restrictions, up to and including closure. Moreover, BLM initially considered two alternatives that would have resulted in closure or imposition of an NSO stipulation over the entire plan area but summarily rejected these as inconsistent with BLM's reasonable use mandate and its projected "reasonable foreseeable development." BLM therefore argues that its alternatives covered a reasonable range of management possibilities. NMWA, however, suggests two specific alternatives that would provide a greater level of environmental protection and argues that each should have been analyzed: (1) closing the whole of the Otero Mesa to fluid minerals development, and (2) managing the Otero Mesa and other fragile and relatively undisturbed parts of the plan area as wilderness study areas. Neither possibility was considered by BLM at any stage during the NEPA process, despite being repeatedly raised during public comment periods and the formal protest period.

1

[19] We begin with NMWA's argument that BLM was required to analyze an alternative prohibiting surface disturbances of the Otero Mesa. As discussed above, Alternative B, the most protective alternative analyzed by BLM, placed an NSO restriction on 116,206 acres of the 427,275-acre Mesa, approximately 27%. The remainder would be subject to controlled surface use stipulations, including a restriction allowing development only within 492 feet of existing roads. NMWA points out that numerous organizations and members of the public advocated for a complete restriction on drilling on the Mesa during the planning process, and it argues that these comments illustrate that this was a reasonable management alternative which BLM should have analyzed.

First, we ask whether an alternative closing the entire Mesa falls within BLM's ***710** statutory mandate for land management. FLPMA delegates authority to BLM to create and amend land use plans. Under the statute, BLM must develop and revise land use plans so as to "observe the principle[ ] of multiple use." 43 U.S.C. § 1712(c)(1). "Multiple use" means "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values." § 1702(c).

BLM argues that an alternative that closes the entirety of the Otero Mesa to development violates the concept of multiple use. But this argument misconstrues the nature of FLPMA's multiple use mandate. The Act does not mandate that every use be accommodated on every piece of land; rather, delicate balancing is required. *See Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 58, 124 S.Ct. 2373, 159 L.Ed.2d 137 (2004). " 'Multiple use' requires management of the public lands and their numerous natural resources so that they can be used for economic, recreational, and scientific purposes without the infliction of permanent damage." *Pub. Lands Council v. Babbitt*, 167 F.3d 1287, 1290 (10th Cir.1999) (citing 43 U.S.C. § 1702(c)); *see also Norton*, 542 U.S. at 58, 124 S.Ct. 2373.

It is past doubt that the principle of multiple use does not require BLM to prioritize development over other uses. As we have reasoned in the past, " '[i]f all the competing demands reflected in FLPMA were focused on one particular piece of public land, in many instances only one set of demands could be satisfied. A parcel of land cannot both be preserved in its natural character and mined.' " *Rocky Mtn. Oil & Gas Ass'n v. Watt*, 696 F.2d 734, 738 n. 4 (10th Cir.1982) (quoting *Utah v. Andrus*, 486 F.Supp. 995, 1003 (D.Utah 1979)); *see also* 43 U.S.C. § 1701(a)(8) (stating, as a goal of FLPMA, the necessity to "preserve and protect certain public lands in their natural condition"); *Pub. Lands Council*, 167 F.3d at 1299 (10th Cir.1999) (citing § 1701(a)(8)). Accordingly, BLM's obligation to manage for multiple use does not mean that development *must* be allowed on the Otero Mesa. Development is a *possible* use, which BLM must weigh against other possible uses-including conservation to protect environmental values, which are best assessed through the NEPA process. Thus, an alternative that closes the Mesa to development does not necessarily violate the principle

of multiple use, and the multiple use provision of FLPMA is not a sufficient reason to exclude more protective alternatives from consideration.

BLM further argues that the purpose of the RMPA process was inconsistent with any management alternative more restrictive than Alternative B. *See Dombeck*, 185 F.3d at 1174-75. Specifically, BLM identifies the purpose of the RMPA as identifying lands suitable for fluid minerals development, and it concludes that any alternative that excludes or severely restricts such development would not be "reasonable." According to the Final EIS, the purpose of the RMPA process was "to determine (1) which lands overlying Federal fluid minerals are suitable for leasing and subsequent development and (2) how those leased lands will be managed." Contrary to BLM's arguments (and the district court's conclusion),[FN31] this ***711** stated purpose does not take development of the Mesa as a foregone conclusion. To the contrary, the question of whether *any* of the lands in the plan area are "suitable" for fluid minerals development is left open, and is precisely the question the planning process was intended to address. It would fit well within the scope of the plan objectives for BLM to conclude that no lands in the plan area are suitable for leasing and development. Accordingly, a management alternative closing the Otero Mesa would have been fully consistent with the objectives of the RMPA.

> FN31. The district court found that BLM was operating under "a directive to facilitate the production of oil and gas from federal lands." The record does not reveal a specific policy directive along these lines, nor does BLM cite one.

Applying the rule of reason, we agree with NMWA that analysis of an alternative closing the Mesa to development is compelled by 40 C.F.R. § 1502.14. Excluding such an alternative prevented BLM from taking a hard look at all reasonable options before it. While agencies are excused from analyzing alternatives that are not "significantly distinguishable" from those already analyzed, *Westlands*, 376 F.3d at 868, the alternative of closing only the Mesa-which represents a small portion of the overall plan area-differs significantly from full closure. As discussed above, the lands at issue are extraordinary in their fragility and importance as habitat. Although the record indicates that most development interest in the plan area focuses on the Mesa, so too does the interest in conservation, as expressed by the public during the comment process. Yet Alternative B, the alternative that would conserve the largest portion of the Mesa, was a far cry from closure.[FN32] Given the powerful countervailing environmental values, we cannot say that it would be "impractical" or "ineffective" under multiple-use principles to close the Mesa to development. Accordingly, the option of closing the Mesa is a reasonable management possibility. BLM was required to include such an alternative in its NEPA analysis, and the failure to do so was arbitrary and capricious.

> FN32. BLM reminds us that, at the outset of the planning process, it briefly considered two more alternatives that would prevent surface development in the entire planning area. These alternatives are at one extreme of the spectrum of management possibilities. Having considered them does not relieve BLM of the duty to consider any other alternative along the spectrum between complete closure and Alternative B. Otherwise, an agency could exclude any alternative it wished by considering (and rejecting) an extreme. *See Dombeck*, 185 F.3d at 1175 (agencies must "take responsibility for defining the objectives of an action and then provide legitimate consideration to alternatives that fall between the obvious extremes").

2

[20] Finally, NMWA argues that wilderness designation of some lands in the plan area provides another reasonable alternative.[FN33] Wilderness is defined as

> FN33. For a thorough explanation of the wilderness system and BLM's authority within it, *see Utah v. U.S. Dep't of Interior*, 535 F.3d 1184 (10th Cir.2008).

> Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which ... (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for

solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.
16 U.S.C. § 1131(c). After passage of FLPMA in 1976, all public lands in the ***712** United States were inventoried by BLM to assess their suitability for wilderness preservation. *See* 43 U.S.C. § 1782; *Utah*, 535 F.3d at 1186-87. Lands determined by BLM to fit the statutory definition were recommended to Congress for formal designation as national wilderness under 43 U.S.C. § 1782(b). *Norton*, 542 U.S. at 59, 124 S.Ct. 2373. Until Congress formally designates lands that have been recommended as wilderness, they are wilderness study areas, which BLM manages under an environmentally protective regime "so as not to impair" their wilderness qualities. § 1782(a), (c). Nonimpairment management implicates all potential uses of wilderness lands, including not only development leasing but activities such as off-road vehicle access and grazing. *See* 43 C.F.R. § 6302.11 (wilderness lands are open only to "uses consistent with the preservation of their wilderness character").

The lands at issue in this case were included in BLM's wilderness inventory process which took place from 1978 through 1990. As a result of this process, BLM recommended four areas within Sierra and Otero Counties for wilderness designation, and they are currently managed as wilderness study areas. BLM determined that the remainder of the plan area, including the Otero Mesa, lacked wilderness characteristics.

Although BLM's authority to recommend lands for Congressional wilderness designation expired in 1991 under the terms of § 1782, BLM has routinely decided to manage additional lands as wilderness under its general land use planning authority.[FN34] *See* 43 U.S.C. § 1712 (granting BLM authority to issue land management plans); *Utah*, 535 F.3d at 1188. NMWA argues that it was unreasonable for BLM not to consider wilderness designation in the RMPA NEPA documents.[FN35]

FN34. NMWA spends considerable time anticipating and addressing an argument that BLM lacks the power to manage lands as wilderness if they were not designated as study areas before 1991, an interpretation BLM adopted in a settlement reached between BLM and the State of Utah in another case. *See* *Utah*, 535 F.3d at 1186 (holding that the question of BLM's power to designate study areas after the settlement was not ripe). BLM does not set forth this argument on appeal, so we need not consider it. We assume arguendo that wilderness study area designation under § 1712 is a lawful land management option.

FN35. During the public comment period on the Draft EIS, NMWA presented BLM with an extensive reinventory of the wilderness characteristics of lands in the plan area. In response, BLM considered whether these lands might have reverted to a wilderness state since being rejected during the earlier assessment. Ultimately, in a 2003 document, it substantially reaffirmed its earlier wilderness determinations, with one exception: BLM found that a 10,665-acre area of the Nutt Grassland had been neglected in the earlier inventory process and determined that it met the criteria for wilderness designation. Thus, BLM decided to manage this area "in a manner that will preserve the entire range of management options ... until a land use plan revision is completed for the area." However, neither the Draft nor Final EIS mentioned this wilderness review or the general possibility of designating wilderness, even as to the Nutt Grassland area.

As stated above, an agency is not required to consider alternatives that are unreasonable in light of the project's purposes. *Dombeck*, 185 F.3d at 1174-75; *Simmons*, 120 F.3d at 668-69; *Idaho Conservation League*, 956 F.2d at 1520. The stated purpose of the RMPA process was "to determine (1) which lands overlying Federal fluid minerals are suitable for leasing and subsequent development and (2) how those leased lands will be managed." Wilderness designation, however, controls all possible uses, not only whether an area may be leased for oil and gas development. BLM thus argues that such ***713** designation was beyond the scope of the planning project. We agree. *See* *Dombeck*, 185 F.3d at 1175 (holding that

"the Forest Service was fully authorized ... to limit its consideration to ... alternatives designed to substantially meet the recreation development objectives" of its planning process). Because BLM's RMPA did not govern all surface uses but only the development of subsurface fluid mineral resources, it was permissible for BLM to determine that a management option governing all surface uses was outside the scope of the plan's objectives. Cf. *Or. Natural Desert Ass'n v. Bureau of Land Mgmt.*, 531 F.3d 1114, 1142-43 (9th Cir.2008) (concluding that wilderness designation was a reasonable alternative when the land use plan at issue governed a broad array of surface uses). Accordingly, we hold that designation of wilderness study areas was reasonably excluded from BLM's analysis.

C

[21] The State contends that BLM's analysis of the environmental impacts of the various alternative management plans failed to sufficiently consider a crucial impact: possible contamination of the Salt Basin Aquifer (the "Aquifer"). BLM concluded in the Draft and Final EISs that any impacts of development on the Aquifer would be "minimal," and it defends that conclusion on appeal. The State argues that this determination is arbitrary and capricious because it is unsupported by evidence in the record.

[22] New Mexico is correct that the EISs devote little analysis to the Aquifer undisputably an important water resource. But insignificant impacts may permissibly be excluded from full analysis in an EIS. *See* 40 C.F.R. § 1508.13 (allowing an agency to decline to prepare an EIS if it finds that an entire project has no significant environmental impacts); § 1508.27 (defining the "significance" of impacts as a function of "both context and intensity"). [FN36] Thus, unless BLM's decision that impacts would be "minimal" was itself arbitrary and capricious, no further analysis was required regardless of the Aquifer's value as a freshwater resource.[FN37]

FN36. Of course, effects must be considered cumulatively, and impacts that are insignificant standing alone continue to require analysis if they are significant when combined with other impacts. 40 C.F.R. § 1508.25(a)(2). The State does not allege that effects on the Aquifer have any such cumulative impacts.

FN37. We agree with BLM that it was permissible to look only to the impacts of gas, not oil, development, because NEPA requires analysis only of "foreseeable" impacts, 40 C.F.R. § 1502.22, and the record shows that only gas development is likely to take place in the area. If oil development becomes foreseeable, it is likely that assessment of its impacts would be required, given that the Final EIS and BLM's briefs acknowledge that oil development would have a much greater potential to cause groundwater contamination.

In order for a factual determination to survive review under the arbitrary and capricious standard, an agency must "examine[ ] the relevant data and articulate[ ] a rational connection between the facts found and the decision made." *Citizens' Comm.*, 513 F.3d at 1176; *accord Or. Natural Res. Council Fund v. Brong*, 492 F.3d 1120, 1130 (9th Cir.2007) (holding that BLM acted arbitrarily where there was "no evidence" to support its estimate of the harm to forest density that would be caused by a proposed logging project); *see also Russell*, 518 F.3d at 831 (upholding an agency's conclusion that a project would have no significant impacts because some evidence supported the finding that harvesting trees within the area would actually save habitat over the long term); ***714***Citizens for Alternatives to Radioactive Dumping*, 485 F.3d at 1098-99 (upholding an agency's decision not to analyze the likelihood of radioactive waste contaminating groundwater through a specific rock layer because the agency relied upon analysis, included in the record, of rock layers with greater conductivity). We consider only evidence included in the administrative record to determine whether an agency decision had sufficient evidentiary support. *Citizens for Alternatives*, 485 F.3d at 1096 (holding that we look only to the record absent "extremely limited circumstances [such as] a strong showing of bad faith or improper behavior" (quotation omitted)).

[23] The district court below viewed New Mexico's challenge as a simple disagreement with BLM's substantive conclusions, but this analysis misapprehends the nature of the State's claim. The State does not ask us to decide whether BLM is *correct* that impacts will be minimal.[FN38] Rather, the State asks us to en-

sure that BLM's conclusion was based on the requisite "hard look" at the evidence before it. New Mexico fears that wastewater from operational natural gas wells will be reinjected into porous underground rock formations through disposal wells, causing contaminants in these waters to leak into the Aquifer. In the Final EIS, BLM concluded that such contamination was not a realistic concern, stating without further analysis that "[t]ypically, natural gas wells make little water and the water produced can be disposed through the use of evaporation ponds."

> FN38. We may overturn an agency's NEPA decisions on substantive grounds only "if the appellants can demonstrate substantively that the agency's conclusion represents a clear error of judgment." *Greater Yellowstone Coal. v. Flowers*, 359 F.3d 1257, 1274 (10th Cir.2004) (quotations omitted). The State does not allege that BLM's decision was so substantively lacking as to meet this standard.

Our first inquiry is whether BLM "examined the relevant data" regarding the likelihood of injection into, and resulting contamination of, the Aquifer. Strikingly, BLM points to no record evidence explaining (1) how much wastewater a natural gas well "typically" produces, (2) whether it is reasonable to believe that wells in the plan area will be "typical," or (3) how much wastewater can practicably be disposed of through evaporation. *See Citizens for Alternatives*, 485 F.3d at 1096. Upon our careful review, the evidence in the record instead tends to support New Mexico's view that nontrivial impacts are possible. The State points to studies concluding that geologically similar gas wells to those planned for the BRU produced 38 barrels, or 1,596 gallons, of water per well per day. At this rate, under the level of development predicted by BLM, up to 603,000 acre-feet of water of the estimated 15 million acre-feet in the Aquifer could be contaminated. Materials in the record also suggest that the rock formations making up the Aquifer are highly fractured and thus, especially susceptible to the dissemination of contaminants should any be reinjected.

A sibling circuit faced a similar issue in *National Audubon Society v. Department of the Navy*, 422 F.3d 174 (4th Cir.2005). In that case, the Fourth Circuit reviewed a Navy decision regarding where to build an aircraft landing field and hold training exercises. *Id.* at 181-82. As here, the Navy completed an EIS, but it declined to exhaustively analyze impacts on the migratory waterfowl that spent winters in the selected training location, *id.* at 183, because it concluded at the outset that any such impacts would be "minor," *id.* at 186. Carefully reviewing the administrative record,***715** the court concluded that the "hard look" requirement was not satisfied: Because evidence in the record indicated that impacts on waterfowl were a possibility, and no evidence pointed to the opposite conclusion, it was impossible to say that the agency had sufficiently examined the evidence before reaching its determination. *See id.* at 187.

Like the Fourth Circuit in *National Audubon Society*, on this record we are wholly unable to say with any confidence that BLM "examined the relevant data" regarding the Salt Basin Aquifer before determining that impacts on the Aquifer would be "minimal." The record is silent regarding the source of BLM's determination that injection (and thus, contamination) is unlikely, and it does provide some support for a contrary conclusion. Though we do not sit in judgment of the *correctness* of such evidence, where it points uniformly in the opposite direction from the agency's determination, we cannot defer to that determination. *See Or. Natural Desert Ass'n*, 531 F.3d at 1142 ("We cannot defer to a void.").

BLM also argues that state and federal injection well and water-quality regulations are designed to prevent the feared contamination. But the existence of these regulations does not preclude the possibility of contamination, even if the protections are intended to prevent such an outcome. Contravening the inference that existing protections are always 100% effective, the record contains evidence that, despite this regulatory scheme, groundwater contamination from gas wells has happened frequently throughout New Mexico in the past. Thus, the mere presence of these regulations cannot make up for BLM's failure to demonstrate that it "examined relevant data" supporting a finding that impacts on the Aquifer will be minimal.[FN39]

> FN39. If the record contained evidence supporting BLM's conclusion that the volume of water likely to be produced would not require injection, then such evidence might well be rationally connected to the decision

> not to analyze impacts on the Aquifer, satisfying the second prong of our review. *Citizens' Comm.*, 513 F.3d at 1176.

We accordingly hold that BLM acted arbitrarily by concluding without apparent evidentiary support that impacts on the Aquifer would be minimal. Of course, BLM is not precluded from making the same determination once again if it provides an evidentiary basis for doing so.

D

Although we have determined that BLM must conduct further analysis on several issues, we do not detract from the broad discretion it exercises in doing so. To quote our Fourth Circuit colleagues:

> It is important to place the foregoing analysis in some perspective. The final decision ... is committed by law to the sound discretion of the [agency], once it has complied with the requirements of NEPA. Our intention is in no way to wrest control of this ultimate decision from [BLM's] hands, or to make NEPA an insurmountable bar to agency action. However, the requirements that Congress has set forth in NEPA are not ones that we are free to disregard.

Nat'l Audubon Soc'y, 422 F.3d at 199. BLM disregarded NEPA when it failed to conduct a thoroughgoing environmental analysis of its chosen land management alternative, failed to consider the reasonable alternative of closing the entire Otero Mesa to fluid mineral development, and failed to demonstrate that it examined the relevant data regarding the likely impact of development on the Aquifer. Each of these failures was more than a mere flyspeck and thwarted NEPA's purposes by ***716** preventing both BLM and the public from accessing the full scope of required environmental information. Despite granting the Agency the full measure of respect and deference warranted by the arbitrary and capricious standard of review, we must reverse.

IV

[24] We now reach the sole issue appealed by defendant-intervenor IPANM: Whether NEPA requires BLM to produce an EIS analyzing the specific environmental effects of the BRU lease before issuing that lease.

As discussed above, after issuing the Final EIS and adopting Alternative A-modified as the new management plan for the area, BLM opened bidding for a lease on the BRU Parcel. The BRU Parcel is adjacent to the HEYCO exploratory well that struck gas and led to the outpouring of lease nominations that triggered the RMPA process. Not surprisingly, HEYCO purchased the lease. In the district court, the State successfully argued that BLM was required to produce a site-specific EIS addressing the environmental impacts of an oil and gas lease on the BRU Parcel before issuing it. IPANM contends on appeal that NEPA requires no more than (1) an EIS at the RMPA stage and (2) a later EIS when HEYCO submits an APD. In other words, the parties dispute how the environmental analysis of drilling in the plan area should be "tiered" as planning progresses from the large scale to the small.[FN40]

> FN40. "Tiering is appropriate when the sequence of statements or analyses is ... [f]rom a program, plan, or policy environmental impact statement to ... a site-specific statement or analysis." 40 C.F.R. § 1508.28. Because BLM began by analyzing the impacts of an area-wide management scheme, and the implementation of that scheme will lead to many individual smaller-scale impacts not yet considered, tiering is unquestionably appropriate here; the question is at what stage the next set of analyses must take place.

Oil and gas leasing follows a three-step process. "At the earliest and broadest level of decision-making, the [BLM] develops land use plans-often referred to as resource management plans...." *Pennaco Energy, Inc. v. U.S. Dep't of Interior*, 377 F.3d 1147, 1151 (10th Cir.2004); *see also* 43 U.S.C. § 1712(a). Next, BLM issues a lease for the use of particular land. The lessee may then apply for a permit to drill, and BLM will decide whether to grant it. § 1712(e); *Pennaco Energy*, 377 F.3d at 1151-52, 43 C.F.R. §§ 1610.5-3, 3162.3-1(c). The parties dispute whether our precedents create a hard rule that no site-specific EIS is ever required until the permitting stage, or a flexible test requiring a site-specific analysis as soon as practicable. If the latter, they dispute whether a site-specific EIS was practicable, and thus required, be-

fore issuance of the July 20 lease.

The parties' claims are primarily a dispute over the interpretation of NEPA and the CEQ regulations, which provide that assessment of a given environmental impact must occur as soon as that impact is "reasonably foreseeable," 40 C.F.R. § 1502.22, and must take place before an "irretrievable commitment of resources" occurs, 42 U.S.C. § 4332(2)(C)(v); *Pennaco Energy*, 377 F.3d at 1160. We do not pursue this interpretation with a clean slate, however, as we have already applied these provisions to the leasing context in several past cases.

This court first addressed the tiering of impacts analysis in the oil and gas leasing context in *Park County Resource Council, Inc. v. U.S. Department of Agriculture*, 817 F.2d 609 (10th Cir.1987), *overruled in part on other grounds by* ***717***Village of Los Ranchos*, 956 F.2d 970.[FN41] In that case, BLM had prepared an "extensive" EA before issuing leases, concluded that leasing would have no immediate environmental impacts, and issued a FONSI concluding that an EIS was unnecessary at that stage. *Id.* at 612. Reviewing the decision to issue a FONSI rather than an EIS, we noted that no exploratory drilling had occurred in the entire plan area at the time the lease was issued, *id.* at 613, and there was no evidence that full field development was likely to occur, *id.* at 623. Moreover, the leased parcel consisted of over 10,000 acres (more than six times the size of the BRU Parcel). *Id.* at 613. Thus, as a common sense matter, a pre-leasing EIS would have "result[ed] in a gross misallocation of resources" and "diminish[ed] [the] utility" of the assessment process, and we affirmed the FONSI. *Id.* at 623 (quotation omitted). We concluded that preparation of both plan-level and site-specific environmental impacts analysis was permissibly deferred until after leasing:

> FN41. *Park County* was decided under a "reasonableness" standard of review, which we rejected in *Village of Los Ranchos* in favor of the arbitrary and capricious standard we apply herein. 956 F.2d at 972.

> As an overall regional pattern or plan evolves, the region-wide ramifications of development will need to be considered at some point. A singular, site-specific APD, one in a line that prior to that time did not prompt such a broad-based evaluation, will trigger that necessary inquiry as plans solidify. We merely hold that, *in this case, developmental plans were not concrete enough at the leasing stage to require such an inquiry.*
>
> *Id.* (emphasis added). After leasing and prior to issuance of an APD, the agency had drafted an EIS, *id.* at 613, and NEPA was thus satisfied, *id.* at 624. IPANM argues that under *Park County*, BLM may routinely wait until the APD stage to conduct site-specific analysis, even without issuing a FONSI.

We next had occasion to consider tiering in the oil and gas context in *Pennaco Energy*. In that case, BLM issued leases for coal bed methane ("CBM") extraction on public lands in Wyoming. 377 F.3d at 1152. A plan-level EIS for the area failed to address the possibility of CBM development, and a later EIS was prepared only after the leasing stage, and thus "did not consider whether leases should have been issued in the first place." *Id.* Because the issuance of leases gave lessees a right to surface use, the failure to analyze CBM development impacts before the leasing stage foreclosed NEPA analysis from affecting the agency's decision. *Id.* at 1160. Accordingly, we held that in the circumstances of that case, an EIS assessing the specific effects of coal bed methane was required before the leasing stage.[FN42] As in *Park County*, the operative inquiry was simply whether all foreseeable impacts of leasing had been taken into account before leasing could proceed. Unlike in *Park County*, in *Pennaco Energy* the answer was "no."

> FN42. We are cognizant that *Pennaco Energy* arose in a very different posture from the present appeal: Because the case came before the district court on BLM's appeal from a decision of the Interior Board of Land Appeals ("IBLA"), we owed deference to IBLA's decision to *conduct* site-specific analysis, rather than to BLM's initial decision *not to conduct* such analysis. 377 F.3d at 1156 & n. 5. However, we could not have affirmed IBLA's decision, regardless of the level of deference, if there were an hard-and-fast rule that assessment need not occur until the APD stage.

Taken together, these cases establish that there is no bright line rule that site-specific analysis may wait until the APD ***718** stage.[FN43] Instead, the inquiry is necessarily contextual. Looking to the standards set

out by regulation and by statute, assessment of all "reasonably foreseeable" impacts must occur at the earliest practicable point, and must take place before an "irretrievable commitment of resources" is made. 42 U.S.C. § 4332(2)(C)(v); *Pennaco Energy,* 377 F.3d at 1160; *Kern,* 284 F.3d at 1072; 40 C.F.R. §§ 1501.2, 1502.22. Each of these inquiries is tied to the existing environmental circumstances, not to the formalities of agency procedures. Thus, applying them necessarily requires a fact-specific inquiry. Both the Ninth Circuit and the District of Columbia Circuit have reached the same conclusion. *See N. Alaska Envtl. Ctr. v. Kempthorne,* 457 F.3d 969, 973, 977-78 (9th Cir.2006) (concluding that an agency's failure to conduct site-specific analysis at the leasing stage may be challenged, but that a "particular challenge" lacked merit when environmental impacts were unidentifiable until exploration narrowed the range of likely drilling sites); *Sierra Club v. Peterson,* 717 F.2d 1409, 1415 (D.C.Cir.1983) (concluding that an agency may wait to evaluate environmental impacts until after the leasing stage if it lacks information necessary to evaluate them, "provided that it reserves both the authority to preclude all activities pending submission of site-specific proposals and the authority to prevent proposed activities if the environmental consequences are unacceptable").

> FN43. Even in *Park County,* when we approved delaying analysis until the APD stage, we did so based on the specific findings of an EA and FONSI, the first steps in the NEPA process. Here, BLM did not issue a FONSI.

Applying these standards to the July 20 lease, we first ask whether the lease constitutes an irretrievable commitment of resources. Just as we did in *Pennaco Energy,* 377 F.3d at 1160, and the D.C. Circuit did in *Peterson,* 717 F.2d at 1412, 1414, we conclude that issuing an oil and gas lease without an NSO stipulation constitutes such a commitment.[FN44] The same regulation we cited in *Pennaco Energy* remains in effect and provides that HEYCO cannot be prohibited from surface use of the leased parcel once its lease is final. *See* 43 C.F.R. § 3101.1-2 ("A lessee shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to: Stipulations attached to the lease ... [and other] reasonable measures...."). Because BLM could not prevent the impacts resulting from surface use after a lease issued, it was required to analyze any foreseeable impacts of such use before committing the resources.

> FN44. Internal BLM documents also support this conclusion. BLM Handbook H-1624-1 ("By law, these impacts must be analyzed before the agency makes an irreversible commitment. In the fluid minerals program, this commitment occurs at the point of lease issuance.").

Accordingly, the next question is whether any environmental impacts were reasonably foreseeable at the leasing stage. Considerable exploration has already occurred on parcels adjacent to the BRU Parcel, and a natural gas supply is known to exist beneath these parcels. Based on the production levels of existing nearby wells, the record reveals that HEYCO has concrete plans to build approximately 30 wells on the BRU Parcel and those it already leases, and it has obtained the necessary permits for a gas pipeline connecting these wells to a larger pipeline in Texas. We agree with the district court that the impacts of this planned gas field were reasonably foreseeable before the July 20 lease was issued. Thus, NEPA required an analysis of the site-specific ***719** impacts of the July 20 lease prior to its issuance,[FN45] and BLM acted arbitrarily and capriciously by failing to conduct one.[FN46]

> FN45. In every EIS, NEPA requires cumulative analysis of possible environmental impacts. *See* 40 C.F.R. § 1508.25(c) (requiring analysis of direct, indirect, and cumulative impacts). Accordingly, BLM is obligated under well-established law to analyze the effects of development on HEYCO's existing leases; roads and pipelines constructed to reach its wells; and any other impacts it can foresee at this stage.

> New Mexico argues that BLM has not yet sufficiently analyzed the impacts of the approved pipeline. The State does not ask us to overturn BLM's approval of the pipeline permits (nor could it, as it did not request such relief below); to the contrary, it urges that analysis of impacts from the pipeline should occur alongside analysis

of all other aspects of oil and gas development of the BRU Parcel. Based on the principal of cumulative impacts, we agree.

FN46. NMWA urges that in the Record of Decision memorializing the adoption of Alternative A-modified, BLM committed to undertake site-specific environmental review before the issuance of any leases, and that this commitment was binding under 40 C.F.R. § 1505.3, which provides that "[m]itigation and other conditions established in the environmental impact statement or during its review and committed as part of the decision shall be implemented" (citation omitted). Given our holding that site-specific review was required at the leasing stage under NEPA itself, we need not reach this argument.

V

[25] New Mexico raises a single claim under FLPMA, arguing that BLM had a statutory duty to circulate Governor Richardson's alternative proposed management plan to the public and specifically invite comment upon it, which it failed to do. Because FLPMA, like NEPA, creates no private right of action, we also review this issue under the APA's arbitrary and capricious standard. *Utah v. Babbitt*, 137 F.3d 1193, 1203 (10th Cir.1998).

FLPMA requires BLM to coordinate its land use planning with state governments. 43 U.S.C. § 1712(c)(9) (providing that BLM shall "coordinate the land use inventory, planning, and management [of federal lands] with the land use planning and management programs ... of the States and local governments within which the lands are located"). Governors must have the opportunity to advise BLM of their positions on draft land use plans, and BLM must consider this input and ensure that "land use plans ... [are] consistent with State and local plans to the maximum extent ... [the Secretary of the Interior] finds consistent with Federal law." FN47 *Id.*

FN47. New Mexico has abandoned its argument below that the RMPA is substantively inconsistent with state plans in violation of this statute.

To facilitate BLM's consistency review, BLM must notify state governments of proposed resource management plans and amendments and "identify any known inconsistencies with State or local plans, policies or programs." 43 C.F.R. § 1610.3-2(e). The governor's office then has 60 days to identify inconsistencies with state law and policy and make recommendations in writing. *Id.* Finally, if BLM does not accept these recommendations, the state may appeal to the BLM National Director, who "shall accept the recommendations of the Governor(s) if he/she determines that they provide for a reasonable balance between the national interest and the State's interest." *Id.* BLM and New Mexico followed this procedure. Governor Richardson signed his "Consistency Review of and Recommended Changes to" the Final EIS on March 5, 2004, accompanied by a press release and published on a state website.FN48 ***720** BLM declined to adopt the bulk of the Governor's proposals, and the state appealed to the Director, who denied the appeal.

FN48. We take judicial notice of the existence and online availability of the review and accompanying press release. *See* Consistency Review; Press Release, N.M. Energy, Minerals and Natural Res. Dep't, Governor Bill Richardson, ENMR Sec'y Joanna Prukop Issue N.M.'s Response to BLM Proposal for Otero Mesa Governor's Plan Offers More Protections for Env't & Wildlife (March 8, 2004), *available at* http:// www. emnrd. state. nm. us/ MAIN/ Administration/ News/ Governors Otero Mesa Plan Rel. pdf.

In addition to notifying the state of any perceived inconsistencies, regulations also require BLM to ensure that members of the public have the opportunity to review and comment on a state's written recommendations. Section 1610.3-2(e) provides:

> If the written recommendations of the Governor(s) recommend changes in the proposed plan or amendment which where not raised during the public participation process on that plan or amendment, the State Director shall provide the public with an opportunity to comment on the recommendation(s).

BLM did not circulate the Governor's recommenda-

tions to the public or specifically solicit comments on those recommendations at any time.

We conclude that BLM nonetheless provided a sufficient opportunity to comment. [FN49] As described above, BLM responded to Governor Richardson's recommendations by rejecting the majority of his proposals but adopting the suggestion that certain core habitat areas be permanently closed to leasing. Accordingly, BLM issued an SEIS describing this change. The SEIS was circulated to the public,[FN50] and the Governor's consistency review was posted on BLM's website.[FN51] In the cover letter accompanying the SEIS, BLM explained that:

> FN49. Thus, we need not determine, as the district court did, whether such an opportunity was required-that is, whether the Governor's plan suggested changes not previously raised during the public participation process.
>
> FN50. Specifically, the SEIS was sent to the individuals who had requested copies of earlier documents related to the RMPA process and to relevant federal, state, tribal, and local agencies.
>
> FN51. The Record of Decision confirms that BLM placed the review on its website.

> This supplement is intended to ... [i]dentify the three areas that the *Governor of New Mexico has recommended* for closure to leasing, and that BLM is now proposing to close to leasing[, and to a]llow the public an opportunity to comment on these issues (emphasis added).

Similarly, in its statement of purpose, the SEIS explained that the habitat closure was suggested by the governor during his § 1610.3-2(e) consistency review:

> During the ... 30-day public protest period and *60-day Governor's Consistency Review period,* BLM received feedback indicating concern about the extent of changes made between the Draft EIS and the Final EIS. *The perception by the Governor of New Mexico* and many of the public is that the changes between the Draft and Final are significant, and that there should have been an opportunity for the BLM to receive public input in the form of comments prior to issuance of the Final EIS. In addition, *the Governor of New Mexico has recommended* that two areas ... be permanently closed to leasing (emphases added).

A notice of the availability of the SEIS was published in the Federal Register, explaining that the habitat changes therein were adopted "[i]n response to recommendations offered by the Governor of New Mexico, made pursuant to *72140 C.F.R. 1610.3-2." 69 Fed.Reg. at 30718. The public was given thirty days from publication of the notice to comment on the SEIS. *Id.* During this comment period, BLM received many comments related to the contents of the Governor's review.

We conclude that because BLM circulated an SEIS that discussed the Governor's consistency review, published a notice in the Federal Register of the SEIS comment period mentioning the Governor's review, and both BLM and New Mexico posted the review on their websites, the public was apprised of the existence of the Governor's review and was afforded an "opportunity to comment" on his proposals. Indeed, many citizens took advantage of this opportunity. A meaningful opportunity to comment is all the regulation requires. It does not require BLM to circulate copies of the Governor's review as a matter of course. [FN52] The opportunity provided by BLM was sufficient, assuming any opportunity was required, and the State's challenge must fail.

> FN52. We do not foreclose the possibility that circulation might be necessary to provide a meaningful opportunity to comment in different circumstances.

VI

For the foregoing reasons, we **VACATE** as moot that portion of the district court's order disposing of NMWA's ESA challenge. We **AFFIRM** the district court's determination that BLM complied with FLPMA, **AFFIRM** its finding that NEPA requires BLM to conduct further site-specific analysis before leasing lands in the plan area, and **REVERSE** its conclusion that BLM complied with NEPA in its plan-level analysis.

C.A.10 (N.M.),2009.
New Mexico ex rel. Richardson v. Bureau of Land

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Comments

DRILLING A HOLE IN THE WATER SUPPLY: REGULATION OF INJECTION WELLS IN TEXAS

Elizabeth Dotson

I. Introduction

Lead is a hazardous contaminant that can cause behavioral problems, learning disabilities, and even death. [FN1] Arsenic is a carcinogen linked to many types of cancer, including skin, lung, kidney, liver, and prostate cancers. [FN2] These two contaminants are among the long list of hazardous contaminants found in wastewater from oil and gas production. These hazardous contaminants may end up in the drinking water supply in Texas as a result of an EPA exemption for wastes generated by oil and gas production.

Texas needs to change its laws to categorize hazardous wastes based on the wastes' potential harm rather than the way in which they were generated. The Texas Commission on Environmental Quality (TCEQ) regulates the water supply in Texas [FN3] and, therefore, it should also regulate the disposal of wastewater that is potentially damaging to the water supply. The recent explosion of gas production in Texas and exploration of the Barnett Shale has led to an increase in wastewater production, which has potentially devastating effects on the drinking water supply.

A. The Barnett Shale

The Barnett Shale of the Fort Worth Basin is the second largest natural gas field in the United States and the largest in Texas. [FN4] The field is located in North Texas and covers Bosque, Comanche, Cooke, Coryell, Dallas, Denton, Ellis, Erath, Hamilton, Hill, Hood, Jack, Johnson, McLennan, Montague, Palo Pinto, Parker, Somervell, Tarrant, and Wise counties. [FN5] The Barnett Shale produces about 10% of the natural gas in Texas and 3% of the natural gas in the United States. [FN6] In 2004, the Barnett Shale had already produced about two and a half trillion cubic feet (TCF) of gas, and the U.S. Geological Survey estimated that the field can produce an additional twenty seven TCF of gas. [FN7] This is roughly "enough gas to heat [ten] million homes for [twenty-seven] years." [FN8] The Barnett Shale development has grown rapidly over the past few years and scientists expect it to continue to grow for at least the next twenty years. [FN9] It has created major economic benefits at both the state and local levels. [FN10] The Barnett Shale has "generat[ed] billions of dollars a year in economic output, including expenditures for development activities, salaries, state and local taxes, lease bonus and royalty payments, and other expenses." [FN11]

B. Gas Production in the Barnett Shale

As a result of the rapid growth that the Barnett Shale has experienced over the past few years, public concerns have arisen over the costs, logistical challenges, and use of fresh water for the gas production. [FN12] A recent drought resulting in a reduction of surface water and groundwater in the Barnett Shale region increased public concern over the use of fresh water for drilling. [FN13] Fresh water is critical to natural gas production in the Barnett Shale, [FN14] and because gas development has moved into more urban areas, including the Fort Worth metro area, the public is more aware of the amount of fresh water that oil and gas development uses. [FN15] This awareness has left many people with the impression that oil and gas production threatens surface water and groundwater supplies in the area. [FN16]

Water use concerns over the Barnett Shale development have created tension between the public and the energy companies. [FN17] One of the main water concerns is the millions of gallons of water used to drill gas wells. [FN18] This water does not recharge fresh water aquifers. [FN19] The droughts in the area have only increased the strain between residents and the energy companies. [FN20] Additionally, the disposal of the flowback water from the wells greatly concerns the public. [FN21] As production increases, the amount of wastewater produced also increases. [FN22] The issue then is what to do with the wastewater.

The possibility of contamination of fresh water also concerns the public. [FN23] Hydraulic fracturing, a process used to enhance, or "stimulate," recovery, produces saltwater that may contaminate surface water and groundwater. [FN24] The hazards of open wastewater pits and water contamination (e.g., gas seeps) also concern local residents. [FN25] During fracturing injection, drillers use the wells to inject fluid into the gas-producing formation. [FN26] When the drillers bring the gas to the surface the previously injected water comes to the surface as well. [FN27] The water that comes to the surface with the gas has a higher salinity level than ocean water and is full of contaminants and heavy metals. [FN28] If the drillers abandon or improperly construct the gas-producing well, the well may seep and contaminate underground sources of drinking water. [FN29]

Additionally, the drillers must dispose of the wastewater that the well produced. [FN30] The most common method of disposal is an injection well through which the drillers inject wastewater into an underground formation similar to the gas-producing formation. [FN31] If the drillers improperly construct, abandon, or incorrectly plug or unplug the injection well, contaminants in the wastewater can seep into the ground, and those contaminants can make their way into fresh water supplies. [FN32]

C. Laws and Regulations Governing Oil and Gas Wells in Texas

The Railroad Commission of Texas (RRC) regulates the drilling of oil and gas wells in Texas. [FN33] The RRC, the Texas Department of Licensing and Regulation (TDLR), and the groundwater conservation districts (GCD) work together to regulate the use of fresh water in the Barnett Shale. [FN34] The TDLR and the GCD regulate the drilling of water supply wells used in oil and gas drilling. [FN35] The TDLR and the GCD may waive some permit requirements where the RRC has already permitted the use of fresh water. [FN36]

Water use is a significant part of the drilling and exploration activities in the Barnett Shale. [FN37] Hydraulic fracturing of both vertical and horizontal wells requires water. [FN38] Drillers use this method of stimulation to recover gas, and it requires millions of gallons of water. [FN39] Increase in water used for production means an increase in the wastewater that will be produced as a result. Various methods of recycling wastewater are underway in an attempt to reduce the amount of fresh water that oil and gas production requires. [FN40] The RRC and the TCEQ are also working together on various saltwater minimization projects. [FN41] As a result of the concerns that have arisen from production in the Barnett Shale, companies working in the basin formed the

Barnett Shale Water Conservation and Management Committee (BSWCMC). [FN42] The BSWCMC aims to develop the best water management practices and consists of major players in Barnett Shale production, including: Chesapeake Energy, ConocoPhillips, Denbury Resources, Devon Energy, Encana Oil & Gas USA, EOG Resources, Harding Company, J-W Operating Company, Marathon Oil Company, Pitts Oil Company, Quicksilver Resources, Range Resources Company, Sauder Management Company, Shell Oil Company, Williams Production, and XTO Energy. [FN43] Thus, the law governing oil and gas wells in Texas allows oil and gas companies to circumvent the GCD and obtain a permit for a water supply well if the company already has a RRC permit.

II. Regulation by the Railroad Commission

A. Jurisdiction

Generally, the RRC has jurisdiction over all oil and gas wells in Texas, including the drilling and operating of those wells and the operation of pipelines. [FN44] The RRC may adopt any rules necessary for regulating under its jurisdiction. [FN45] Additionally, the RRC regulates the disposal of wastewater under the Texas Water Code. [FN46]

B. Use of Fresh Water in Gas Drilling

The production and exploration of oil and gas in Texas requires water. [FN47] Water goes into and comes out of oil and gas production. [FN48] Unfortunately, it is generally fresh water that goes into production and hazardous, contaminated wastewater that is generated by the process. [FN49] Water is used

> as a supplemental fluid in enhanced recovery of petroleum resources; during drilling and completion of an oil or gas well; during workover of an oil or gas well; during solution of underground salt in brine mining or hydrocarbon storage cavern creation; as gas plant cooling and boiler water; as hydrostatic test water for pipelines and tanks; as rig wash water; as coolant for internal combustion engines for rigs, compressors, and other equipment; for sanitary purposes; and for laboratory purposes. [FN50]

Enhanced recovery requires the largest volume of water of all oil and gas activities. [FN51] Drilling and completion of oil and gas wells requires the second largest volume of water in oil and gas activities. [FN52] Drilling requires water for "drilling fluid preparation and make-up water, for completion fluids, including cementing, in well stimulation, as rig wash water, as coolant for internal combustion engines; and for sanitary purposes." [FN53]

C. Regulation of Water

Oil and gas drilling requires the use of both surface water and groundwater. [FN54] The state of Texas owns the water that flows through creeks, rivers, and bays. [FN55] The TCEQ must authorize anyone who wants to divert this water. [FN56] As a result, producers must get a water rights permit from the TCEQ to use these surface waters for oil or gas activity. [FN57]

A portion of the water that is generally used for oil and gas activities is "saline or brackish" water. [FN58] This is water that is drawn from underground reservoirs and consists of less-than-usable quality water. [FN59] The RRC requires oil and gas operators to obtain a permit to draw water from these formations. [FN60] Drillers

must have a drilling permit to drill an injection well that penetrates the base of usable quality water. [FN61] Drillers must complete and plug an injection supply water well that penetrates the base of usable quality water in accordance with the RRC rules. [FN62] When a fresh water well is drilled above the base of usable quality water, other non-RRC regulations apply. [FN63]

On September 1, 2003, the TDLR began regulating water-well drillers. [FN64] A licensed water well driller must drill any rig supply wells and must submit required information, including drilling logs, to the TDLR. [FN65] The TDLR also regulates the completion and plugging of the wells. [FN66]

Texas regulates groundwater in two different ways. Individuals may manage the water under the "rule of capture" or GCDs may manage the water. [FN67] The rule of capture allows landowners to pump as much water as they like, without liability to neighbors, as long as there is not waste. [FN68] It does not matter that the pumping drains water from the neighbor's well. [FN69] Texas Water Code, Chapter 36, created GCDs to "conserve, preserve, protect, recharge, and prevent waste of groundwater resources within their boundaries." [FN70]

Chapter 36 of the Texas Water Code does not apply to production or injection wells drilled for oil and gas. [FN71] Chapter 36 allows certain exceptions for "temporary rig supply wells and limitations on injection water supply wells used in association with oil and gas activity." [FN72] The statute has a permit exception for temporary rig supply wells, and the GCD may not require a permit for these wells if the RRC already permits the well. [FN73] The rig water supply well, however, must comply with GCD rules and regulations that govern the installation of casing, pipe, and fittings. [FN74] This compliance is necessary so that ground water does not escape from a groundwater reservoir to a reservoir not containing groundwater, and so that there is not pollution or "harmful alteration" of water in the groundwater reservoir. [FN75] Drillers must file a drilling log with the GCD, and the well must be plugged in compliance with the GCD. [FN76] If the application complies with the GCD rules, the GCD may not deny an application for a permit to drill an injection supply water well. [FN77] Furthermore, if the RRC already authorized the water well, the GCD may not also require its own permit. [FN78]

III. Water Use in the Barnett Shale

Water is an important part of gas drilling for several reasons. First, the drilling process, known as hydraulic fracturing, requires a substantial amount of water to complete just one well. [FN79] Second, the drilling and fracturing process creates the potential for pollution of existing aquifers. [FN80] Third, the water disposal process also creates the potential for pollution of existing aquifers. [FN81] The RRC regulates the gas drilling process and the disposal of waste. [FN82]

A. Hydraulic Fracturing

The Newark East Field of the Barnett Shale recently became one of the most active drilling fields. [FN83] The activity has spread throughout the area and now covers sixteen counties in North Texas, including Wise, Montague, Denton, and Tarrant. [FN84] Because of the low permeability of shale, drillers have difficulty recovering the gas. [FN85] There is a high volume of gas-in-place in the Barnett Shale, and drillers use stimulation technology for better recovery. [FN86] Stimulation increases the shale's permeability and makes gas recovery more economic. [FN87]

In the Barnett Shale, drillers use a recovery method known as hydraulic fracturing, informally called fracing, to recover gas. [FN88] This increases the available surface area for more efficient recovery. [FN89] In hydraulic fracturing, drillers pump large volumes of fresh water into the formation. [FN90] The drillers treat the water with "a friction reducer, biocides, scale inhibitor, and surfactants, and [the water] contains sand as the propping agent." [FN91] Sand holds open the fractures and results in an increased surface area. [FN92] This increased surface area increases the mobility of the gas and allows it to be extracted from the shale. [FN93]

Drillers performed the first light sand frac (or slick water frac) in 1997, and they "found [it] to be very successful in stimulating the Barnett Shale." [FN94] Hydraulic fracturing uses a large amount of water. [FN95] "Slick water fracing of a vertical well completion can use over 1.2 million gallons (28,000 barrels) of water, while the fracturing of a horizontal well completion can use over 3.5 million gallons (over 83,000 barrels) of water." [FN96] After several years of production, drillers may re-fracture wells multiple times, requiring even more water. [FN97]

B. Water Use Estimates

Barnett Shale drilling is one factor that has raised concerns about the availability of water in North Central Texas. [FN98] Until recently, however, there was little data that reflected how much water was actually used for fracturing. [FN99] The Texas Water Development Board (TWDB) published a study in January 2007 on groundwater use that included the Barnett Shale development area. [FN100] The amount of water that drillers used for drilling and fracing the more than 5,000 wells in the Tarrant County area is about equal to the average water usage for 185,000 households. [FN101] While the usage grows, however, the water used from all sources for Barnett Shale development has been less than 1% of the total freshwater usage for all purposes in the Barnett Shale development counties and about 3% of the total groundwater use. [FN102] The report predicted future water use, including water use in Barnett Shale development. [FN103] It estimated that Barnett Shale development could use between 5,200 and 10,000 to 25,000 acre-feet of water per year by 2025. [FN104] This would be consistent with an increase in groundwater use from 3% in 2005 to between 7 and 13% by 2025. [FN105]

Although the total percentage of water that the Barnett Shale development uses is small, developers are still trying to find innovative ways to conserve water. [FN106] One example of this is the BSWCMC, [FN107] formed "to develop best-management practices for companies operating in the Barnett Shale." [FN108] Several operators in the Barnett Shale also pilot projects in the area to reduce the consumption of fresh water. [FN109] Two of the current projects involve recycling water after fracture stimulation. [FN110] One project involves heated distillation, while the other involves sequential filtration. [FN111]

C. Water Recycling

Over the past few years, the RRC has approved several pilot projects for recycling water in the Barnett Shale. [FN112] These projects benefit the public because the projects can greatly reduce the amount of fresh water used. [FN113] These programs also reduce the amount of wastewater that requires disposal. [FN114] Fountain Quail Water Management of Jacksboro (Fountain Quail) was the first pilot program that the RRC approved. [FN115] Fountain Quail's process involves on-site distilling units. [FN116] Once drillers inject water to fracture formations, it returns with a high salt content, making it unusable. [FN117] The distilling units use heat to separate the brine from the water. [FN118] Instead of moving the fracture flowback to a disposal well because it is unusable, drillers pipe the flowback into treating equipment, which produces fresh distilled water. [FN119] The

Fountain Quail project has been technically successful and has processed "more than 1.6 million barrels of frac fluid to recover 1.3 million barrels of reusable water." [FN120]

In an October 31, 2006, news release, the RRC approved another water recycling project. [FN121] The RRC authorized Devon Energy Production Company to begin a pilot project that would filter water to treat fracture flowback so that it could also be reused. [FN122] Devon's pilot project uses a mobile water treatment system that runs frac fluid through "three engineered membranes at 120 gallons per minute." [FN123]

Recycling frac water has become increasingly popular and successful. In 2003 and 2005, the RRC authorized Burlington Resources and Stroud Energy to re-use flowback water without a permit. [FN124] In April 2006, the RRC granted DTE Gas Resources, Inc. authority for a pilot project to store, treat, handle, and re-use flowback water. [FN125] And effective in January 2007, the RRC granted Devon Energy authority to run a pilot project to store, treat, handle, and re-use flowback water. [FN126]

IV. Injection Wells and Waste Water: The Need to Address the Contaminated Water Generated by Oil and Gas Production

By volume, water is the largest byproduct of the oil and gas extraction process, especially in wells that are near the end of their productive lives. [FN127] The American Petroleum Institute estimates that for every barrel of oil produced there are eight barrels of wastewater produced. [FN128] In addition to the water injected for hydraulic fracturing or other recovery methods, oil and gas reserves contain formation water, a natural water layer that lies underneath petroleum due to its higher density. [FN129] When drillers extract the oil or gas, they eventually bring both the injected water and formation water to the surface. [FN130] Drillers then "[reinject this water to] the original source, [reinject it] into wells or other geological formations, or [transfer it] to a commercial disposal facility." [FN131]

> Impurities in waste water include: high concentrations of salt; suspended and dissolved hydrocarbons, formation solids, hydrogen sulfide, carbon dioxide, and a deficiency of oxygen; dissolved solids and heavy metals, such as calcium, magnesium, potassium, barium, chromium, strontium, radium, lead, arsenic, manganese, iron, and antimony; additives such as coagulants to assist the separation of oil and solids from water, corrosion inhibitors, emulsion breakers, biocides, dispersants, paraffin-control agents, and scale inhibitors; chemicals including acids, oxygen scavengers, surfactants, friction reducers, and scale dissolvers; heavy minerals such as borum and chromium; and, radionuclides such as uranium, radon, and radium. [FN132]

A. What Are Injection Wells?

Injection wells place fluid into porous rock formations deep underground or into or below the soil layer. [FN133] Drillers may inject wastewater using injection wells. [FN134] The Underground Injection Control (UIC) Program defines this type of well as "a bored, drilled, or driven shaft, or a dug hole that is deeper than it is wide, an improved sinkhole, or a subsurface fluid distribution system." [FN135] In the 1930s, drillers began to widely use injection wells to dispose of brine (salt water) from oil production. [FN136] In the 1950s, chemical companies began disposing of their unwanted industrial waste through injection wells. [FN137] Drillers considered injection wells to be a "safe and inexpensive option for the disposal of unwanted and often hazardous industrial byproducts." [FN138] By the 1960s, however, deep injection wells created cases of contamination in potential drinking water sources and caused an earthquake in Colorado. [FN139] The EPA developed the UIC to

support regulations that protect underground drinking water sources. [FN140]

B. Regulation of Injection Wells in Texas

Despite the impurities found in wastewater, [FN141] the EPA does not classify it as a hazardous waste. [FN142] Wastewater associated with oil and gas production falls into its own category, and the EPA classifies these injection wells as Class II injection wells. [FN143] States have the option of primacy for regulating Class II wells under the Safe Drinking Water Act, though they must still meet the EPA's minimum requirements. [FN144] The EPA has currently delegated primacy to thirty-three states, including Texas. [FN145]

C. EPA Exemption

Class II wells for oil and gas production consist of enhanced recovery wells, disposal wells, and hydrocarbon storage wells; all are types of injection wells. [FN146] The brine injected into these disposal wells is likely saltier than seawater and can contain toxic and radioactive substances. [FN147] In December 1978, the EPA reduced requirements for several types of waste that it considered to be "special wastes" and lower in toxicity than other hazardous wastes. [FN148] Congress exempted these large volume wastes from the Resource Conservation Recovery Act (RCRA) after determining that control of these wastes was not warranted. [FN149] "[G]as and oil drilling muds and oil production brines" were among the wastes that the RCRA exempted, and in 1980 Congress expanded the act to include "drilling fluids, produced water, and other wastes associated with the exploration, development, or production of crude oil or natural gas." [FN150] The phrase "other wastes associated" includes "waste materials intrinsically derived from primary field operations associated with the exploration, development, or production of crude oil and natural gas." [FN151] In the production of natural gas, as in the Barnett Shale, primary field operations include activities at the wellhead and at the gas plant, regardless of their location in relation to the wellhead. [FN152]

The EPA determines exempted waste based on actual waste generation rather than whether the generated material is hazardous or toxic. [FN153] The exemption of these materials only applies if they are generated by the exploration and production of oil and gas, and the exemption does not apply if the same materials are generated from some other operation. [FN154] Thus, the EPA exempts waste that it might otherwise consider hazardous because oil and gas production or exploration generated the waste.

V. Requirements for Water Wells Associated with Gas Activity

There are various requirements associated with drilling oil and gas wells. The TCEQ, RRC, GCD, and TDLR all regulate gas activity. [FN155] Currently, the EPA exempts from its hazardous waste regulations water that oil and gas drilling and exploration produces. [FN156]

A. Texas Department of Licensing and Regulation

When a supply well will not "penetrate the base of usable quality water," the TDLR requires that a licensed water well driller drill the well. [FN157] The TDLR also requires that the driller keep a well log and send a copy to both the TDLR and the TCEQ. [FN158] The rig supply-water well must comply with TDLR standards and procedures, and the driller must plug or cap the well within 180 days of either when the driller abandons the well

or the well deteriorates. [FN159] Additionally, the driller must also submit a plugging report. [FN160]

For rig supply wells that penetrate the base of usable quality water, if the driller encounters water that is harmful to vegetation, land, or other water, and the driller determines that the well must be plugged or repaired to avoid injury or pollution, the driller must notify the TDLR and the landowner or person having the well drilled. [FN161]

B. Groundwater Conservation District

The GCD exempts wells that do not penetrate the base of usable quality water from its permitting requirement. [FN162] These wells are exempt from the permitting requirements of the GCD so long as the drillers use them to supply water to rigs actively engaged in drilling or exploration, the RRC permits the well, and the supply well is on the same lease as the rig. [FN163] The GCD requires drillers to register supply wells in accordance with its rules. [FN164] Furthermore, the GCD requires drillers to equip and maintain the supply wells to conform to GCD rules, and install casing, pipe, and fittings to prevent both groundwater from escaping the well and the pollution or alteration of groundwater in a reservoir. [FN165] The driller must submit a log to the GCD, which may require a permit and compliance with all GCD rules if the exempted well is no longer supplying water solely to the rig that is actively engaged in operations permitted by the RRC. [FN166] Any groundwater withdrawn from the well and subsequently transported outside the boundaries of the GCD is subject to production and export fees that may apply. [FN167]

VI. RRC/TCEQ Saltwater Minimization Projects

In some instances the RRC requires oil and gas operators to obtain a groundwater protection recommendation (GWPR) letter. [FN168] The TCEQ issues the GWPR letter and states the depth to which the groundwater must be protected in the well. [FN169] There are three types of GWPR letters: seismic letters, saltwater disposal letters, and surface casing letters. [FN170] To design the appropriate casing for the saltwater disposal well, the RRC relies on the information in the saltwater disposal letter. [FN171] The RRC relies on this information to design an appropriate surface casing program for each new, plugged, or re-entered well. [FN172] The GWPR letters advance the efforts of the RRC and TCEQ in saltwater minimization. The RRC and the TCEQ are working together to "eliminate a potential source of salinity in these projects through the plugging of abandoned, non-compliant oil and gas wells and the re-plugging of improperly plugged wells." [FN173] These wells threaten to pollute surface and groundwater in these areas. [FN174] The ultimate goal of the RRC and the TCEQ is to eliminate the pollution threat that unplugged or improperly plugged wells pose and reduce the chloride content of already polluted waters. [FN175]

The RRC and TCEQ are currently cooperating in two saltwater minimization projects: the Choke Canyon Saltwater Minimization Project and the Petronila Creek Saltwater Minimization Project. [FN176] These projects select wells in the area that need to be plugged and then plug these wells. [FN177]

A. Choke Canyon Saltwater Minimization Project

The Choke Canyon Saltwater Minimization Project's objective is to eliminate contamination of water in the Choke Canyon drainage basin by plugging abandoned wells, unplugged non-compliant wells, and improperly plugged wells. [FN178] These wells are a threat of pollution because they provide a pathway for wellbore fluids

to migrate up to subsurface and surface waters. [FN179] The Choke Canyon area covers five counties: Live Oak, McMullen, Atascosa, Frio, and La Salle. [FN180] According to a bulletin issued by the TCEQ in August 1965, the TCEQ "identified a potential threat of contamination of the water in the Carrizo Sand by the movement of brines from underlying saltwater-bearing sands through improperly cased oil wells, or from improperly plugged oil wells." [FN181] This area includes fields such as the Callahan Field, which was discovered in 1918, and the Jacob Field, which was discovered in 1936. [FN182] This project intends to restore and maintain the quality of the water in the Choke Canyon area. [FN183]

Originally the project was set to begin September 1, 2005, and be completed by August 31, 2009. [FN184] The project was pushed back, however, until the TCEQ and the RRC executed an interagency contract on April 5, 2006. [FN185] Under this project, the RRC identified 226 wells to be plugged in the project area. [FN186] During the fiscal year (FY) 2006, the project plugged twenty-four wells, and through the end of FY 2007, the project plugged eighty wells. [FN187]

B. Petronila Creek Saltwater Minimization Project

This project consisted of two phases; the first included Nueces, Kleberg, and Jim Wells Counties, and the second covered only Nueces County. [FN188] The goal was to eliminate a source of salinity in the Petronila Creek drainage basin by plugging abandoned wells, oil and gas wells that are not in compliance, and improperly plugged wells. [FN189] Phase I of the project consisted of plugging fifty-six wells and was completed in FY 2005. [FN190] The goal of phase II was to plug twenty oil and gas wells by August 31, 2008. [FN191] To achieve this goal, the process began by identifying and selecting the wells to be plugged. [FN192]

The Petronila Creek empties into Baffin Bay and is tidally influenced. [FN193] Oil and gas production in the area began in the 1920s. [FN194] Because the creek was tidally influenced, the RRC allowed the disposal of saltwater into the creek. [FN195] This may be partially to blame for the increase in salinity levels in the creek. Other sources that may have contributed to the contamination include "natural saline-water seeps, evaporation, farming practices, manufacturing, runoff from naturally saline soil, and oil and gas field activities." [FN196] The salinity in the water is a major water quality problem. [FN197]

The Petronila Creek project was originally set to begin September 1, 2004 but was postponed until after the RRC and the TCEQ executed an interagency contract on February 4, 2005. [FN198] Because of severe down-hole problems in the wells, the wells plugged under phase II of the project have been plugged at a much higher cost than was anticipated. [FN199] There are currently no wells that need to be plugged, yet the plugging goals have not been met. [FN200] As a result and because of the shortage of wells that need to be plugged, the TCEQ gave the RRC an extension on the interagency contract. [FN201] The parties extended the contract until August 31, 2008. [FN202]

VII. Issues Concerning Water Use and Wastewater in the Barnett Shale

Production in the Barnett Shale has increased dramatically in the past few years. Tarrant County and the Fort Worth metro area are the most active areas in the Barnett Shale. [FN203] Because this entails drilling in an urban area, residents and regulatory agencies have many concerns. [FN204]

A. Problems with Production

Typically, drillers face the question of what to do with the water. Gas production in the Barnett Shale requires fracturing, which involves injecting water into formations believed to contain gas to bring the gas to the surface. [FN205] The process of fracturing requires the use of millions of gallons of water. Once a driller fractures, the process creates wastewater, and it becomes imperative that the driller locate a safe area to store or dispose of the water. [FN206] Typically drillers inject the wastewater into different and deeper zones than the producing zone. [FN207] Production has increased in the Barnett Shale, and that means an increase in the wastewater produced. [FN208] The RRC continually permits new injection wells. [FN209] As long as oil and gas producers can find locations for injection wells, there is not a problem. [FN210] While there is no problem with finding locations yet, this may become a problem if the production in the Barnett Shale continues to increase. [FN211] Additionally, the fracing process pollutes the water that is used with more than twenty-six chemicals, including the carcinogen benzene. [FN212] The millions of gallons of water being polluted are then injected into deep wells, which, if done improperly, could migrate into existing aquifers and reduce the supply of ground water. [FN213]

B. Increase in Production

Productivity of gas wells in the Newark, East (Barnett Shale) Field has increased every year since 1993. [FN214] In 1993 there were 11 billion cubic feet (Bcf) produced in the Barnett Shale. [FN215] This number steadily increased at first to 14 Bcf in 1994 and 20 Bcf in 1995. [FN216] In 2000 production began to increase at a more rapid pace, increasing from 41 Bcf in 1999 to 79 Bcf in 2000 to 135 Bcf in 2001. [FN217] By 2004, companies produced 381 Bcf in the Barnett Shale. [FN218] More recently, in 2006, companies produced 668 Bcf in the Barnett Shale. [FN219] As of October 16, 2008, there were a total of 9,801 gas wells on record in the Barnett Shale. [FN220] Additionally, the RRC had permitted 5,035 locations. [FN221] With increase in production comes increase in waste. In 2007, the RRC had sixty-four commercial saltwater disposal wells on its records, and it issued an additional thirty-six disposal permits. [FN222] There are no signs that production in the Barnett Shale is slowing down. The permits issued January through October 2007 (3,140) were nearly triple the number of permits issued for the entire year of 2004 (1,112). [FN223]

VIII. Proposals for Balancing Regulation of Water Issues and Protection of the Environment

A. Current Law Governing Disposal of Wastewater

The EPA developed the UIC to support regulations to protect underground drinking water sources. [FN224] The EPA exempted certain wastes from hazardous status. [FN225] The EPA exempts waste based on how the material was generated rather than whether the material generated is hazardous or toxic. [FN226] "[G]as and oil drilling muds and oil production brines" were among the wastes exempted from the RCRA, and the RCRA was expanded in 1980 to include "drilling fluids, produced water, and other wastes associated with the exploration, development, or production of crude oil or natural gas." [FN227] Texas has primacy for regulating Class II wells under the Safe Drinking Water Act, though it must still meet the EPA's minimum requirements. [FN228]

Generally, the RRC has jurisdiction over all oil and gas wells in Texas, and it also has jurisdiction over the drilling and operating of those wells and the operation of pipelines. [FN229] Additionally, the RRC regulates the disposal of wastewater under the Texas Water Code. [FN230] The law requires that drillers have a drilling permit to drill an injection well that penetrates the base of usable quality water. [FN231] The legislature created

GCDs to "conserve, preserve, protect, recharge, and prevent waste of groundwater resources within their boundaries." [FN232] Chapter 36 of the Texas Water Code does not apply to production or injection wells drilled for oil and gas. [FN233] The GCD may not require its own permit if the RRC has already authorized the driller to drill a water well. [FN234]

B. Problems and Alternatives

Drilling gas wells, as well as oil and gas exploration and production, uses millions of gallons of water. [FN235] Fracturing is a large part of this water consumption. [FN236] Once drillers fracture, they end up with millions of gallons of wastewater. [FN237] Despite the categorization of wastewater from oil and gas exploration and production as non-hazardous, [FN238] the wastewater can contain hazardous materials. Rather than classifying waste by how it was produced, wastewater should be classified as hazardous or non-hazardous according to the contaminants that it contains. Class II disposal wells dispose of "non-hazardous" waste from oil and gas exploration and production. [FN239] The Safe Drinking Water Act and RCRA more stringently regulates Class I hazardous waste disposal wells, which dispose of wastes not exempt from a hazardous status. [FN240] Class I wells that dispose of hazardous waste make up about 22% of the 550 Class I wells and are much deeper than Class II wells, ranging from 1,700 to over 10,000 feet deep. [FN241]

Wastewater from oil and gas production contains heavy metals such as lead, arsenic, and barium, "heavy minerals such as borum and chromium," and "radionuclides such as uranium, radon, and radium." [FN242] This wastewater should not be exempt from hazardous status just because it was generated in order to produce oil and gas. Texas has primacy and must meet the minimum standards set by the EPA; however, the minimum standards should be more stringent to better protect our drinking water.

Currently, the RRC regulates the drilling of oil and gas wells in Texas. [FN243] The RRC has jurisdiction over all oil and gas wells in Texas and the operation of those wells and pipelines. [FN244] Under the Texas Water Code, the RRC also regulates the disposal of wastewater associated with oil and gas production. [FN245] As a result, the TCEQ does not regulate the disposal of wastewater. The TCEQ is responsible for the quality of the environment in Texas. It regulates the quality of our water, and it should be the agency responsible for regulating the disposal of wastewater. Wastewater generated from oil and gas production should be classified as hazardous when the water contains hazardous contaminants that potentially threaten the environment, the drinking water supply, and fresh water in Texas.

C. TCEQ Regulation of Hazardous Wastewater

a. Hazardous Classification

While brine makes up the majority of waste from oil and gas production, hazardous chemicals often mix with the water. [FN246] Wastewater generated from exploration and production of oil and gas should not be subject to less stringent regulations than hazardous waste simply because of how the wastewater was produced. This can lead to severe impacts on the environment if there is contamination or seepage because despite the classification, the wastewater may still be hazardous. In instances where the injection well is solely used for brine, the wells should not be considered hazardous. But wastewater injected underground into disposal wells below our drinking water supply should be tested for hazardous contaminants. Wastewater that includes hazardous

wastes should be dealt with according to the more stringent standards in place for the disposal of hazardous waste.

Regulating wastewater by the contaminants that it includes would serve to better protect the environment. Disposal wells can be very safe ways to dispose of wastewater, but if they are not properly drilled, cased, or plugged, the damage to the environment from seepage can be severe. If the TCEQ more stringently regulates hazardous wastewater, it will be less likely to be disposed of improperly. This is highly advantageous because it seeks to protect the environment from contaminants such as lead, which "may cause a range of health effects, from behavioral problems and learning disabilities, to seizures and death." [FN247] It would potentially protect the water supply from arsenic, from which the "[n]on-cancer effects can include thickening and discoloration of the skin, stomach pain, nausea, vomiting; diarrhea; numbness in hands and feet; partial paralysis; and blindness. Arsenic has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate." [FN248] Drillers often mix drilling mud containing barium with wastewater and dispose of it through injection wells. [FN249] "Barium has been found to potentially cause gastrointestinal disturbances and muscular weakness when people are exposed to it at levels above the EPA drinking water standards for relatively short periods of time." [FN250]

Wastewater generated in oil and gas production is not safe merely because the EPA has exempted it from being considered hazardous. "[G]as and oil drilling muds and oil production brines" were among the wastes that the RCRA exempted, and the statute was expanded in 1980 to include "drilling fluids, produced water, and other wastes associated with the exploration, development, or production of crude oil or natural gas." [FN251] This does not mean that the lead, arsenic, barium, borum, chromium, uranium, radon, radium, or other such hazardous materials are any less hazardous and they should not be regulated any less stringently.

b. Regulation by the TCEQ

Because it regulates the production of oil and gas, the RRC regulates the disposal of wastewater generated from oil and gas exploration and production. [FN252] This could lead to a conflict of interest between the production of oil and gas and the waste that the production generates. If the TCEQ regulated the disposal of the wastewater generated through oil and gas production, there would be more separation between those parties who generate the waste and those that produce the waste. The EPA requires the RRC to meet minimum standards for injection wells. [FN253] The RRC also permits the wells that create the wastewater. [FN254] And when the RRC permits additional wells that create millions of additional gallons of wastewater, drillers must do something with that wastewater. Is the RRC, the agency permitting the wastewater to begin with, really the best agency to monitor the disposal of wastewater?

The RRC continually permits new injection wells. [FN255] Because of the formation of the Barnett Shale, injection wells are the best way to recover gas. [FN256] Drillers also consider injection wells the best way to dispose of wastewater. [FN257] Projects like the Petronila Creek Saltwater Minimization Project and the Choke Canyon Saltwater Minimization Project, however, show the problems with the disposal of wastewater. They also demonstrate that to prevent or repair these situations, the TCEQ must step in. These projects did not originate with the RRC as part of its regulation of disposal wells. These projects were initiated because of very real threats to the contamination of the water supply. In these joint projects, the TCEQ requires the RRC to physically plug wells that have been abandoned, unplugged, and improperly plugged. [FN258] Rather than the TCEQ stepping in and requiring the RRC to plug these wells, the TCEQ should initially regulate the wells to ensure that the

wells comply from the beginning.

The effects of contamination from wastewater wells have potentially devastating effects on the environment. Because the TCEQ is responsible for environmental quality, it should directly permit and monitor the wastewater wells that inject wastewater into the ground near drinking water supplies. The TCEQ would have an easier job if it initially regulated wastewater. If the TCEQ were the entity responsible for permitting injection wells, it would control the process from the beginning. Additionally, it would be easier to preserve and protect the water supply if the TCEQ were involved in the entire process rather than having to step in to correct contamination that has already occurred.

The amount of freshwater used for oil and gas exploration and production has raised eyebrows in Texas. The RRC permitted several pilot programs for recycling water used for fracturing. [FN259] This is often done on site. [FN260] Unfortunately, the failure to classify the wastewater as hazardous is being touted as an advantage for desalination programs. [FN261] "One key that makes desalination affordable is that the contaminants removed from the brine can be injected back into the oil and gas producing formation without having to have an EPA Class I hazardous injection permit." [FN262] The advertisement of a way to circumvent what should be proper procedures for dealing with hazardous contaminates illustrates the need to have the TCEQ regulating the use of injection wells. It would be in the best interest of Texas to have the TCEQ in a position to balance the benefits of recycling wastewater against the potential harm of injecting hazardous materials into the ground and to regulate accordingly.

Problems may initially arise during the process of implementing the change of the permitting process and regulation of injection wells from the RRC to the TCEQ. The TCEQ, however, already oversees injection wells for the disposal of wastes that are not related to the exploration and production of oil and gas. The EPA has put into place minimum requirements, and the TCEQ is already accustomed to the regulation of such wells. After initial implementation, the TCEQ would be completely qualified to be the regulatory agency responsible and would stand in a better position to preserve the water quality of Texas.

IX. Conclusion

The millions of gallons of wastewater generated through oil and gas exploration and production has a very high salinity and usually contains a number of contaminants. While these contaminants may be very hazardous and potentially harmful to the environment, they have been exempted from the EPA's list of hazardous wastes. Wastewater containing hazardous chemicals, minerals, and heavy metals will not require a Class I hazardous permit as long as it is a product of oil and gas exploration and production.

Texas should changeits laws to protect its drinking water supply and environment. The disposal of wastewater as Class I or Class II should be a distinction made based upon the contaminants in the water. When wastewater from oil and gas production contains hazardous materials it should require a Class I hazardous disposal permit. The TCEQ regulates water quality in Texas. If water that has a potentially hazardous effect on the environment is being disposed of, the agency that is responsible for environmental quality should regulate it. The TCEQ should regulate the disposal of wastewater in order to better preserve and protect the quality of the water and environment in Texas.

[FN1]. Dixie Farley, Dangers of Lead Still Linger, FDA Consumer Magazine, Jan.-Feb. 1998, ht-

tp://www.fda.gov/FDAC/features/1998/198_lead.html.

[FN2]. Basin Water, Inc., The Dangers of Arsenic, http:// www.basinwater.com/arsenic/dangers.php4 (last visited Dec. 12, 2008).

[FN3]. Texas Commission on Environmental Quality, Office of Permitting and Registration, http://www.tceq.state.tx.us/about/organization/oprr.html#3 (last visited Dec. 12, 2008).

[FN4]. L. Peter Galusky, Jr., Fort Worth Basin/Barnett Shale Natural Gas Play: An Assessment of Present and Projected Fresh Water Use ii (2007), http:// www.texerra.com/Barnetthydro.pdf.

[FN5]. Id. at 13.

[FN6]. Id. at ii.

[FN7]. Id.

[FN8]. Id.

[FN9]. Id. at 1.

[FN10]. Id. at ii.

[FN11]. Id.

[FN12]. Id.

[FN13]. Id.

[FN14]. Id. at 1.

[FN15]. Id.

[FN16]. Id.

[FN17]. Galusky, supra note 4, at ii.

[FN18]. Railroad Commission of Texas, Water Use in the Barnett Shale, http://www.rrc.state.tx.us/barnettshale/wateruse_barnettshale.php (last visited Dec. 12, 2008) [hereinafter Water Use].

[FN19]. League of Women Voters of Tarrant County, Natural Gas Drilling Facts and Issues 4, http://www.lwvtarrantcounty.org/files/drilling_facts_issues.pdf (last visited Dec. 12, 2008).

[FN20]. Galusky, supra note 4, at ii.

[FN21]. League of Women Voters of Tarrant County, supra note 19, at 4.

[FN22]. Id.

[FN23]. Id.

[FN24]. Water Use, supra note 18.

[FN25]. See id.

[FN26]. See League of Women Voters of Tarrant County, supra note 19, at 4.

[FN27]. See id.

[FN28]. Railroad Commission of Texas, Water Use in Association with Oil and Gas Activities Regulated by the Railroad Commission of Texas, http:// www.rrc.state.tx.us/barnettshale/wateruse.php (last visited Nov. 20, 2008) [hereinafter Oil and Gas Activities].

[FN29]. Texas Environmental Profiles, Water, Oil and Gas Wells, http:// www.texasep.org/html/wql/wql_3grw_oil.html (last visited Nov. 2, 2008).

[FN30]. League of Women Voters of Tarrant County, supra note 19, at 4.

[FN31]. Ground Water Protection Council, Injection Wells: An Introduction to their Use, Operation and Regulation, http://www.gwpc.org/e-library/e-library_ document/elibrary_documents_general/uic%20brochure%208_2005.pdf (last visited Oct. 4, 2008).

[FN32]. Id.

[FN33]. Oil and Gas Activities, supra note 28.

[FN34]. Id.

[FN35]. Id.

[FN36]. Id.

[FN37]. Galusky, supra note 4, at ii.

[FN38]. Water Use, supra note 18.

[FN39]. Id.

[FN40]. See id.

[FN41]. Oil and Gas Activities, supra note 28.

[FN42]. Galusky, supra note 4, at ii.

[FN43]. Id. at 3.

[FN44]. Tex. Nat. Res. Code Ann. § 81.051 (Vernon 2007).

[FN45]. Id. § 81.052.

[FN46]. Tex. Water Code Ann. §§ 27.015-.016 (Vernon 2007).

[FN47]. Oil and Gas Activities, supra note 28.

[FN48]. Id.

[FN49]. Id.

[FN50]. Id.

[FN51]. Id.

[FN52]. Id.

[FN53]. Id.

[FN54]. Id.

[FN55]. Id.

[FN56]. Id.

[FN57]. Id.

[FN58]. Id.

[FN59]. Id.

[FN60]. Id.

[FN61]. 16 Tex. Admin. Code § 3.5 (2006) (Tex. R.R. Comm'n, Application to Drill, Deepen, Reenter, or Plug Back).

[FN62]. Id. §§ 3.13-.14 (Plugging; Surface Casing to be Left in Place).

[FN63]. Oil and Gas Activities, supra note 28.

[FN64]. Id.

[FN65]. Id.

[FN66]. Id.

[FN67]. Id.

[FN68]. Id.

[FN69]. Id.

[FN70]. Id.

[FN71]. Tex. Water Code Ann. § 36.117(b)(2) (Vernon 2007).

[FN72]. Oil and Gas Activities, supra note 28.

[FN73]. § 36.117.

[FN74]. Oil and Gas Activities, supra note 28.

[FN75]. Id.

[FN76]. Id.

[FN77]. § 36.117(g).

[FN78]. Id.

[FN79]. League of Women Voters of Tarrant County, supra note 19, at 4.

[FN80]. Id.

[FN81]. Id.

[FN82]. Id.

[FN83]. Water Use, supra note 18.

[FN84]. Id.

[FN85]. Id.

[FN86]. Id.

[FN87]. Id.

[FN88]. Id.

[FN89]. Id.

[FN90]. Id.

[FN91]. Id.

[FN92]. Id.

[FN93]. Id.

[FN94]. Id.

[FN95]. Id.

[FN96]. Id.

[FN97]. Id.

[FN98]. Id.

[FN99]. Robert Francis, Data on Water Use in the Barnett Shale Begins to Surface, Fort Worth Business Press, Mar. 12, 2007, http:// www.fwbusinesspress.com/display.php?id=5838.

[FN100]. Water Use, supra note 18.

[FN101]. League of Women Voters of Tarrant County, supra note 19, at 4.

[FN102]. Water Use, supra note 18; Francis, supra note 99.

[FN103]. Water Use, supra note 18.

[FN104]. Id. One acre-foot of water would cover one acre to the depth of one foot and is equivalent to 325,851 gallons of water. Id.

[FN105]. Id.

[FN106]. Francis, supra note 99.

[FN107]. See supra text accompanying notes 42-43.

[FN108]. Francis, supra note 99.

[FN109]. Id.

[FN110]. Id.

[FN111]. Id.

[FN112]. Water Use, supra note 18.

[FN113]. Id.

[FN114]. Press Release, Railroad Commission of Texas, Railroad Commission Approves Projects to Recycle Water at Barnett Shale Gas Drilling Sites (Oct. 31, 2006), available at http:// www.rrc.state.tx.us/pressreleases/2006/103106.php.

[FN115]. Id.

[FN116]. Water Use, supra note 18.

[FN117]. Id.

[FN118]. Id.

[FN119]. Id.

[FN120]. Railroad Commission of Texas, supra note 114.

[FN121]. See id.

[FN122]. Id.

[FN123]. Id.

[FN124]. Water Use, supra note 18.

[FN125]. Id.

[FN126]. Id.

[FN127]. Sean Smith, Katy Rexford, and Katherine Teitgen, Bluewater Network, Drilling to Disaster 4 (2002), http://www.bluewaternetwork.org/reports/rep_pl_ drilling_disaster.pdf [hereinafter Smith et al.]. Water can be 98% of the material being brought to the surface in wells that are near the end of their productive life. Id.

[FN128]. Id.

[FN129]. Id.

[FN130]. Id.

[FN131]. Id.

[FN132]. Id.

[FN133]. Environmental Protection Agency, Basic Information about Injection Wells, http://www.epa.gov/safewater/uic/basicinformation.html#what_is (last visited Nov. 21, 2008) [hereinafter Injection Wells].

[FN134]. Id.

[FN135]. Id.

[FN136]. Id.

[FN137]. Id.

[FN138]. Id.

[FN139]. Id.

[FN140]. Id.

[FN141]. Smith et al., supra note 127, at 5.

[FN142]. See Injection Wells, supra note 133.

[FN143]. See id.

[FN144]. Id.

[FN145]. Id.

[FN146]. See id.

[FN147]. Id.

[FN148]. Environmental Protection Agency, Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations 5 (2002), http:// permanent.access.gpo.gov/websites/epagov/www.epa.gov/epaoswer/other/oil/oil-gas.pdf [hereinafter Exemption].

[FN149]. Id.

[FN150]. Id. at 6.

[FN151]. Id.

[FN152]. Id. at 7.

[FN153]. Id. at 8.

[FN154]. Id. at 9.

[FN155]. Oil and Gas Activities, supra note 28.

[FN156]. Smith et al., supra note 127, at 5.

[FN157]. Oil and Gas Activities, supra note 28.

[FN158]. Tex. Occ. Code Ann. § 1901.251 (Vernon 2004).

[FN159]. Id.

[FN160]. Id. §§ 1901.253-256.

[FN161]. Id. § 1901.254.

[FN162]. 16 Tex. Admin. Code § 3.5(e) (2006) (Tex. R.R. Comm'n, Application to Drill, Deepen, Reenter, or Plug Back).

[FN163]. Tex. Water Code Ann. § 36.117(b)(2) (Vernon 2007).

[FN164]. § 1901.253.

[FN165]. § 36.117(h).

[FN166]. Id. § 36.117(d)(1).

[FN167]. Id. §§ 36.117(k), 36.122, 36.205.

[FN168]. Texas Commission on Environmental Quality, Surface Casing to Protect Groundwater: Am I Regulated?, http:// www.tceq.state.tx.us/permitting/waste_permits/surface_casing/surf_casing_ AIR.html (last visited

Dec. 14, 2008).

[FN169]. Id.

[FN170]. Id.

[FN171]. Id.

[FN172]. Texas Commission on Environmental Quality, Requesting a Surface Casing Letter, http://www.tceq.tate.x.us/permitting/waste_permits/surface_ casing/surf_casing.html (last visited Dec. 14, 2008).

[FN173]. Railroad Commission of Texas, RRC/TCEZ Saltwater Minimization Projects, http://www.rrc.state.tx.us/environmental/plugging/saltwaterminprojects.php (last visited Dec. 14, 2008) [hereinafter Saltwater Minimization].

[FN174]. Id.

[FN175]. Railroad Commission of Texas, Petronila Creek Saltwater Minimization Project Phase II 8 (2008), http:// www.rrc.state.tx.us/environmental/plugging/petronilafinalreport072308.pdf [hereinafter Petronila].

[FN176]. Saltwater Minimization, supra note 173.

[FN177]. Petronila, supra note 175, at 8.

[FN178]. Railroad Commission of Texas, Choke Canyon Reservoir Saltwater Minimization Project 5, 6, 27 (2008), http:// www.rrc.state.tx.us/environmental/plugging/chokecanyonfinalreport072408.pdf [hereinafter Choke].

[FN179]. Id. at 6.

[FN180]. Id.

[FN181]. Id. at 5.

[FN182]. Id.

[FN183]. Id. at 5-6.

[FN184]. Id. at 7.

[FN185]. Id.

[FN186]. Id. at 16-17.

[FN187]. Id.

[FN188]. Petronila, supra note 175, at 6.

[FN189]. Id. at 5.

[FN190]. Id. at 6.

[FN191]. Id. at 6-7.

[FN192]. Id. at 15.

[FN193]. Id. at 6.

[FN194]. Id.

[FN195]. Id.

[FN196]. Id. at 27.

[FN197]. Id. at 5.

[FN198]. Id. at 6.

[FN199]. Id. at 16.

[FN200]. Id.

[FN201]. Id. at 5, 7.

[FN202]. Id. at 5.

[FN203]. See League of Women Voters of Tarrant County, supra note 19, at 2.

[FN204]. See, e.g., id.

[FN205]. Id.

[FN206]. Telephone Interview with Dan Gutierrez, Engineer, Railroad Commission of Texas, in Austin, Tex. (Jan. 10, 2008).

[FN207]. Id.

[FN208]. Id.

[FN209]. Id.

[FN210]. Id.

[FN211]. Id.

[FN212]. League of Women Voters of Tarrant County, supra note 19, at 4.

[FN213]. Id.

[FN214]. See Railroad Commission of Texas, Newark, East (Barnett Shale) Well Count 1993 through 2007, https:// www.rrc.state.tx.us/barnettshale/barnettshalewellcount1993-2007.pdf (last visited Dec. 14, 2008).

[FN215]. Id.

[FN216]. Id.

[FN217]. Id.

[FN218]. Id.

[FN219]. Id.

[FN220]. Texas Railroad Commission, Newark, East (Barnett Shale) Statistics 1 (2008), http://www.rrc.state.tx.us/data/fielddata/barnettshale.pdf.

[FN221]. Id.

[FN222]. Id.

[FN223]. Id.

[FN224]. Environmental Protection Agency, History of the UIC Program-Injection Well Time Line, http://www.epa.gov/safewater/uic/history.html (last visited Dec. 14, 2008).

[FN225]. See generally Exemption, supra note 148, at 10.

[FN226]. Id. at 8.

[FN227]. Id. at 6.

[FN228]. Environmental Protection Agency, Oil and Gas Related Injection Wells (Class II), http://www.epa.gov/safewater/uic/wells_class2.html (last visited Dec. 14, 2008).

[FN229]. Tex. Nat. Res. Code Ann. § 81.051 (Vernon 2007).

[FN230]. Tex. Water Code Ann. §§ 27.015-.016 (Vernon 2007).

[FN231]. 16 Tex. Admin. Code § 3.5(e) (2006) (Tex. R.R. Comm'n, Application to Drill, Deepen, Reenter, or Plug Back).

[FN232]. Oil and Gas Activities, supra note 28.

[FN233]. Tex. Water Code Ann. § 36.117(b)(2) (Vernon 2007).

[FN234]. Id. § 36.117(e).

[FN235]. Water Use, supra note 18.

[FN236]. Id.

[FN237]. Gutierrez, supra note 206.

[FN238]. See Environmental Protection Agency, Classes of Wells, http:// www.epa.gov/safewater/uic/wells.html

(last visited Dec. 14, 2008).

[FN239]. Id.

[FN240]. See Environmental Protection Agency, Industrial & Municipal Waste Disposal Wells (Class I), http://www.epa.gov/safewater/uic/wells_class1.html (last visited Dec. 14, 2008).

[FN241]. Id.

[FN242]. Smith et al., supra note 127, at 4.

[FN243]. Tex. Nat. Res. Code Ann. § 81.051 (Vernon 2007).

[FN244]. Id.

[FN245]. Tex. Water Code Ann. §§ 27.015-.016 (Vernon 2007).

[FN246]. Gutierrez, supra note 206.

[FN247]. Environmental Protection Agency, Lead in Paint, Dust, and Soil, http://www.epa.gov/lead/ (last visited Nov. 26, 2008).

[FN248]. Environmental Protection Agency, Arsenic in Drinking Water, http://www.epa.gov/safewater/arsenic/index.html (last visited Dec. 14, 2008).

[FN249]. Gutierrez, supra note 206.

[FN250]. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry, ToxFAQs for Barium, http:// www.atsdr.cdc.gov/tfacts24.html#bookmark02 (last visited Dec. 14, 2008).

[FN251]. Exemption, supra note 148, at 6.

[FN252]. Tex. Nat. Res. Code Ann. § 81.051 (Vernon 2007).

[FN253]. Exemption, supra note 148, at 6.

[FN254]. Gutierrez, supra note 206.

[FN255]. Id.

[FN256]. Id.

[FN257]. Id.

[FN258]. See Petronila, supra note 175, 5-6; see Choke, supra note 178, at 6.

[FN259]. David B. Burnett, Potential for Beneficial Use of Oil and Gas Produced Water 5-6, https://www.rrc.state.tx.us/commissioners/williams/environment/beneficialuses.pdf (last visited Nov. 26, 2008).

[FN260]. Id. at 1.

[FN261]. Id.

[FN262]. Id.
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